Mar. 1997
No. 60110

JVC Service Manual

THREE CCD COLOR VIDEO CAMERA
DREI CCD-FARBVIDEO KAMERA
CAMERA VIDEO COULEUR A TROIS CCD

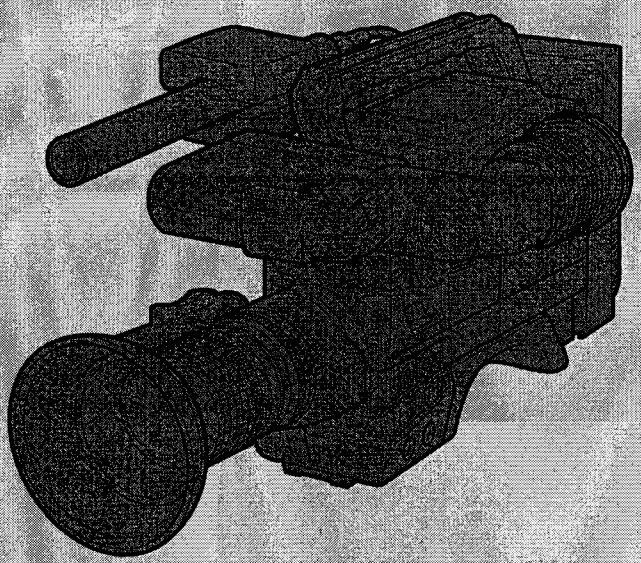
MODEL **KY-D29U**

MODELL
MODÈLE **KY-D29E**

VICTOR COMPANY OF JAPAN, LIMITED

No. 60110

JVC Service Manual



(Lens, viewfinder, microphone and camera adapter are optional.)

MODEL **KY-D29U/KY-D29E**

Printed in Japan

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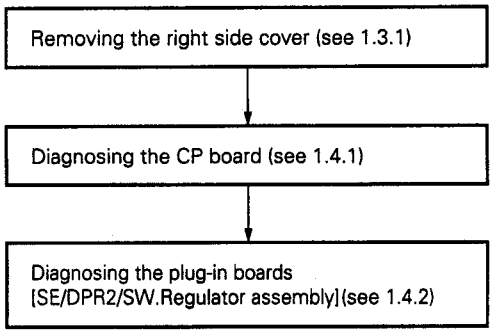
SECTION 1
SERVICE CAUTIONS AND DISASSEMBLY

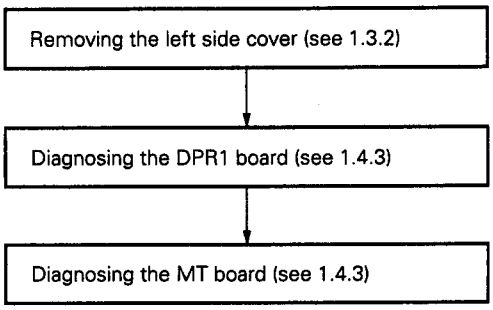
1.1 DISASSEMBLY FLOWCHART

The following flowchart shows the procedure of disassembly of the product before fault diagnosing the board assembly or replacing the optical block assembly. Be sure to turn off the power supply of the camera adapter before disassembling or assembling the product.

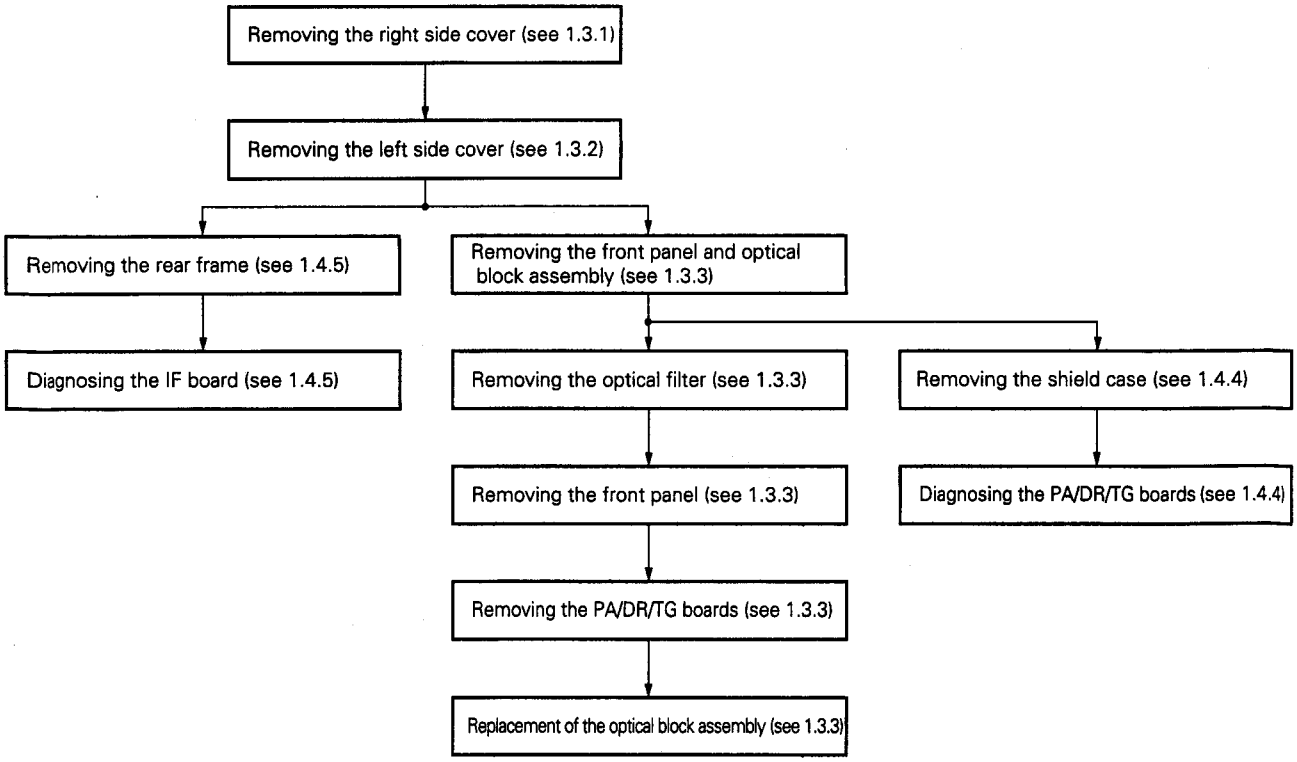
1.1.1 Disassembly flowchart for diagnosing the CP board, plug-in type circuit boards [SE/DPR2/SW. Regulator assembly]



1.1.2 Disassembly flowchart for diagnosing the MT board



1.1.3 Disassembly flowchart for replacing the optical block assembly and diagnosing the IF/PA/DR/TG boards



1.2 POWER FUSE

The KY-D29 does not incorporate a fuse or power circuit breaker. During the use of the KA-27 camera adapter, the circuitry inside the camera head and camera adapter is protected against over-current by the fuse inside the KA-27.
When the camera head is integrated with a VCR, the circuitry is protected by the fuse and circuit breaker inside the VCR.
To replace the fuse, please refer to the service manual of the KA-27 or the VCR in use.

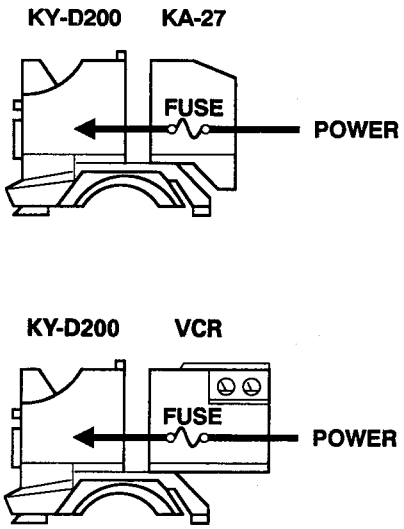


Fig. 1-2-1 Power Fuse

1.3 REMOVAL OF PRINCIPAL PARTS

1.3.1 Removing the right side cover

(1) Loosen the 4 screws ① and remove the right side cover Ⓐ.

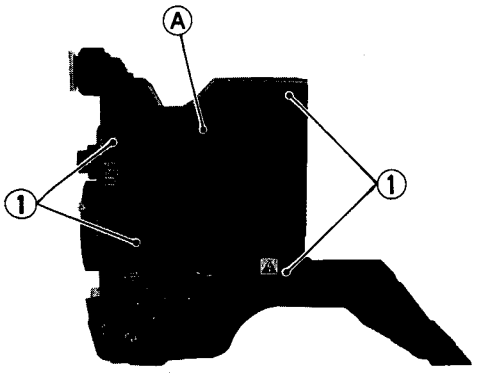


Fig. 1-3-1 Removing the Right Side Cover

1.3.2 Removing the left side cover

(1) Loosen the 4 screws ② and remove the left side cover Ⓑ.

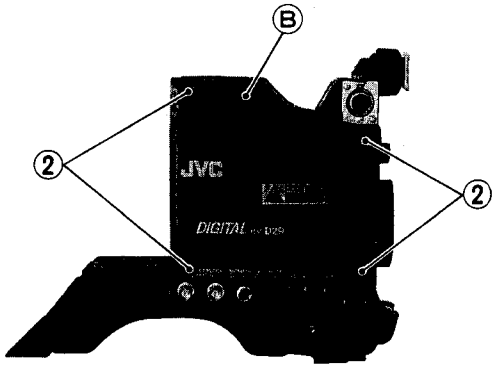


Fig. 1-3-2 Removing the Left Side Cover

1.3.3 Removing the optical filter assembly and optical block assembly

(1) Remove both side covers (see sections 1.3.1 and 1.3.2).
(2) Remove the screw ③ from the MT board on the left side and the screw ④ below it.

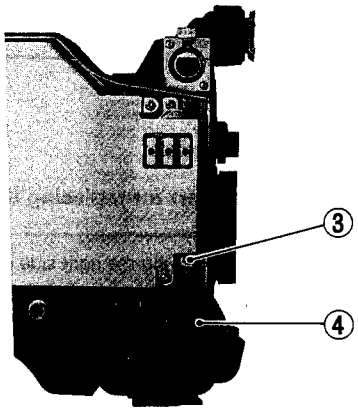


Fig. 1-3-3

(3) Remove the 2 screws ⑤ from the bottom frame.
(4) Remove the 3 screws ⑥ from the front panel.
(5) Pull out the optical block assembly together with the front panel Ⓒ gently toward the front.

NOTE

Be very careful not to scratch or damage the circuit boards and flat cables.

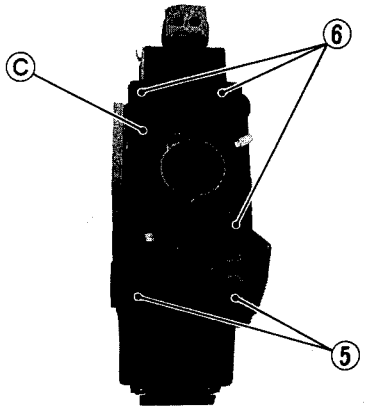
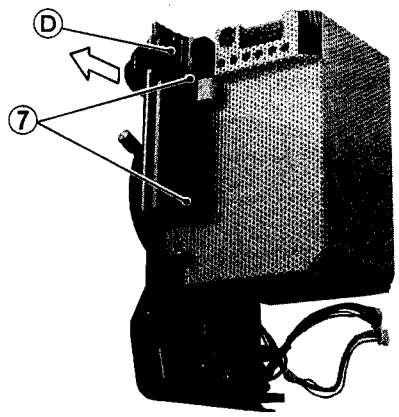


Fig. 1-3-4

(6) Loosen the 2 screws ⑦.
(7) Take out the optical filter assembly Ⓓ in the direction of the arrow.



*The shield case is not provided.

Fig. 1-3-5 Removing the Optical Filter Assembly

- Usually, the optical filter assembly does not need to be removed. However, when it is removed then attached, observe the position relationship between the filters and filter shaft as shown in Fig. 1-3-6.

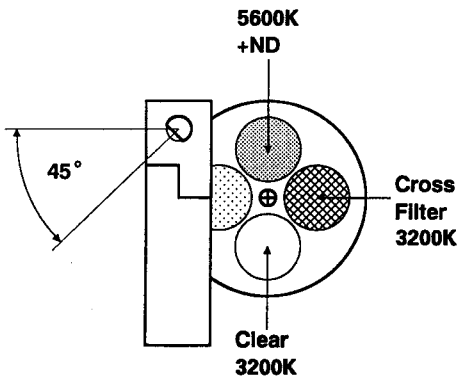


Fig. 1-3-6 Position Relationship Between Filters and Filter Shaft

(8) Remove the 4 screws ⑧ from the front panel, and separate the front panel Ⓒ from the optical block assembly.

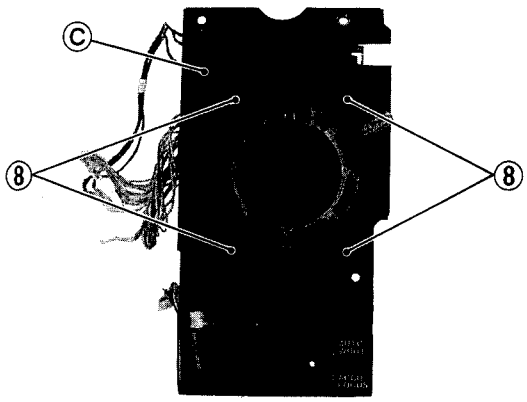


Fig. 1-3-7

(9) Remove the 2 screw ⑩ then remove the PA board.

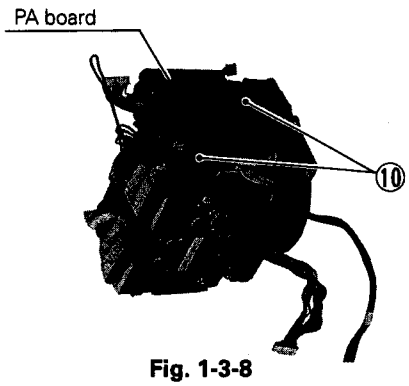


Fig. 1-3-8

(10) Remove the 2 studs ⓐ from the TG board and the 2 screws ⑨ from the DR board, then remove the TG and DR boards.

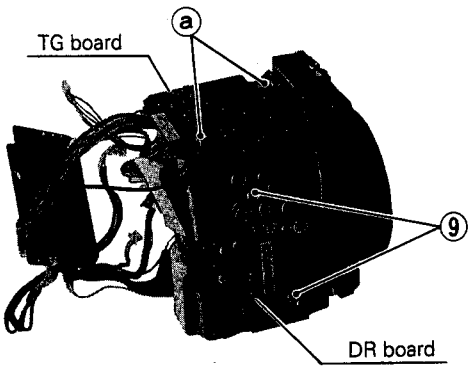


Fig. 1-3-9 Removing the Optical Block Assembly

NOTES

- **The CCDs are precision-bonded on the prisms. Therefore, even if a CCD fails, it is not possible to replace the deffective CCD alone. The entire optical block assembly should be replaced in such a case.**
- **The optical block assembly (SCM0937-N0A[NTSC]/ SCM0937-P0A[PAL]) provided as a service part is not equipped the PA, TG and DR boards. When replacing the assembly, attach the circuit boards and the bracket to the new optical block assembly before mounting it in the camera head.**

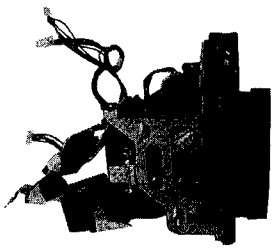


Fig. 1-3-10 Optical Block Assembly

1.4 DIASSEMBLY FOR DIAGNOSTICS OF MAIN BOARDS

1.4.1 Diassembly for diagnosing the CP board

(1) Remove the right side cover (see section 1.3.1).
(2) By removing the 2 screws ① from the CP board, the CP board can be opened as shown in Fig. 1-4-1, so that the diagnoses can be done easily.

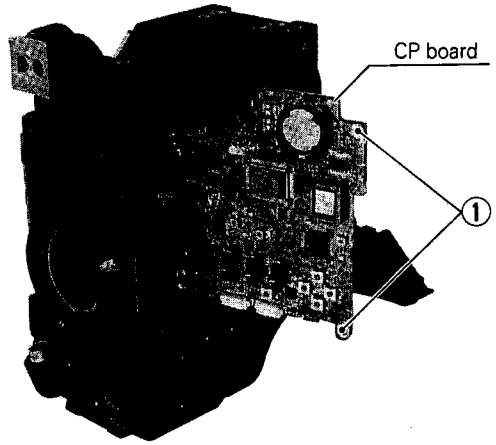


Fig. 1-4-1 CP Board

NOTE

The lower hinge of the CP board has been designed so that the board is stopped at the position where it is opened by 90 degrees. When closing the circuit board, lift it slightly to free it. Be careful not apply unnecessary force to the circuit board, for this may damage the chip components.

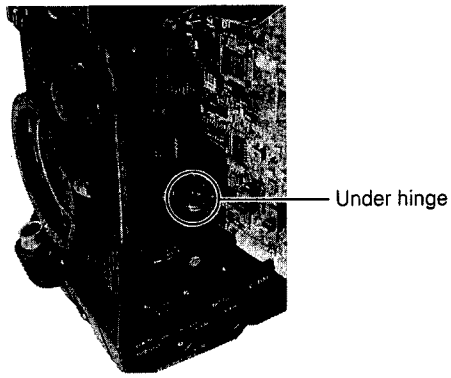


Fig. 1-4-2

1.4.2 Diassembly for diagnosing the plug-in boards [SE, DPR2,SW.Regulator assembly]

The plug-in circuit boards are connected to the MT board and requires the extension board (SCK2169) for their diagnostics.
(1) Take out the plug-in boards in the direction of the arrow by pulling them by section Ⓐ shown in the figure.

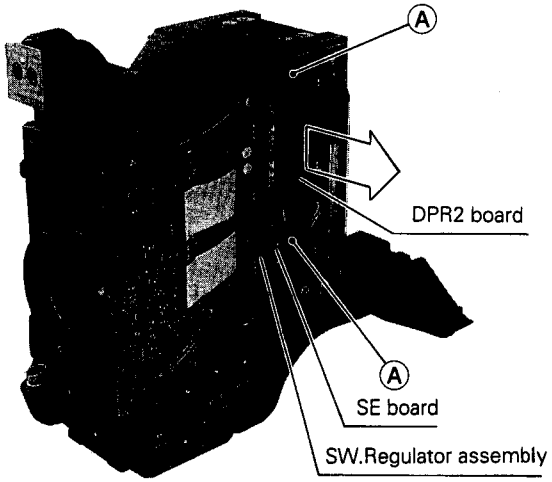


Fig. 1-4-3

(2) Connect the extension board to the MT board.
(3) Connect the removed plug-in boards to the extension board.

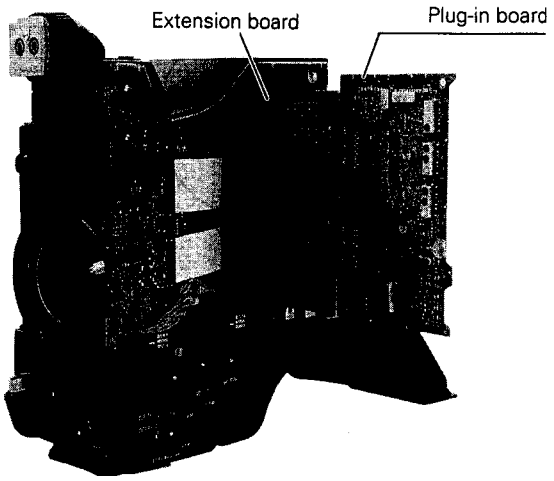


Fig. 1-4-4 Plug-in Boards

The diagnosis of the plug-in boards (SE, DPR2, SW, Regulator assembly) can be performed in the above condition. The extension of the plug-in boards should be done one by one.

NOTE

The same connectors are used for all three plug-in boards. Make sure to connect the right connector when these boards are connected to a MT board.

1.4.3 Diassembly for diagnosing the DPR1 and MT boards

(1) Remove the left side cover (see section 1.3.2).
(2) Remove the 4 screws ② then remove the shield cover Ⓑ.

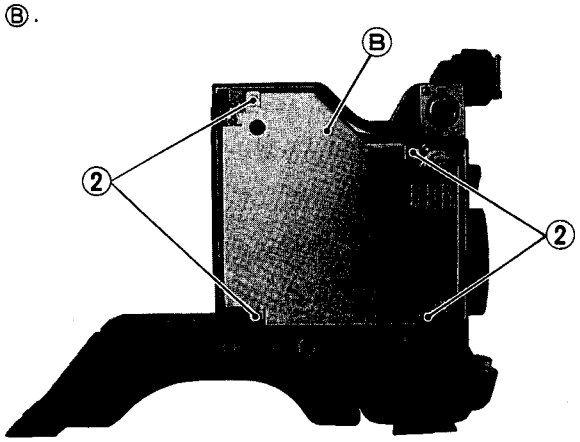


Fig. 1-4-5

(3) The DPR1 board is connected with the MT board through CN22 and CN 23. Carefully remove the DPR1 board.

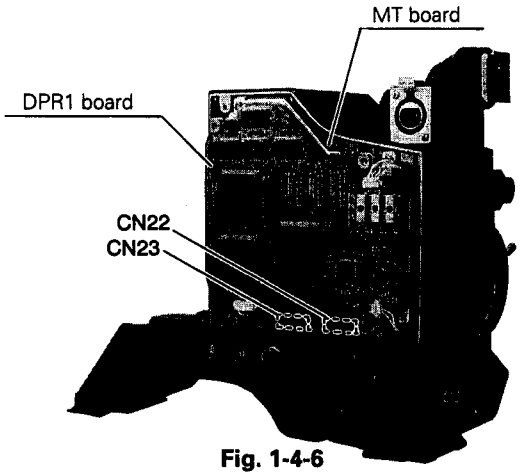


Fig. 1-4-6

(4) Remove the 4 screws ③ and the MT board shield cover Ⓒ before starting the diagnostics of the MT board.
(5) The DPR1 board can be opened by 90 degrees with respect to the connected MT board as shown in Figure 1-4-7. The diagnostics of the DPR1 and MT boards can be performed in this condition.

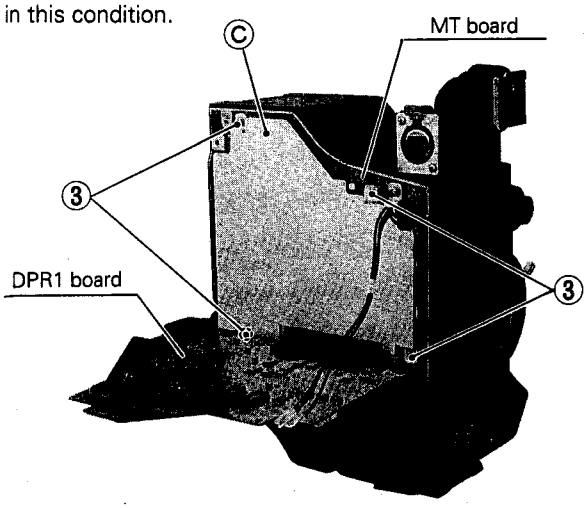


Fig. 1-4-7 DPR1 and MT Boards

(6) When attaching the circuit boards to their original condition, place the slack section of the wire connected to CN1 in the space above the optical block assembly. Also ensure that CN22 and CN23 of the DPR1 board are connected securely to the MT board.

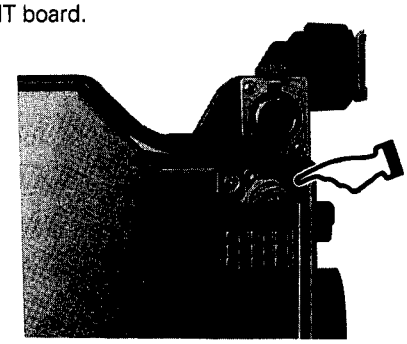


Fig. 1-4-8

1.4.4 Diassembly for diagnosing the PA, DR and TG boards

(1) By following steps (1) to (5) in section 1.3.3, remove the optical block assembly together with the front panel.
(2) By following steps (9) to (11) in section 1.3.3, remove the shield case and remove the PA, TG and DR boards.
(3) The diagnostics of the PA, DR and TG boards can be performed in this condition.

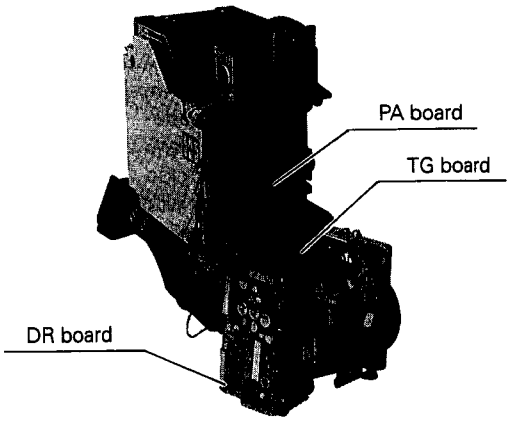


Fig. 1-4-9 PA, DR and TG Boards

1.4.5 Diassembly for diagnosing the IF board

(1) Remove both side covers (see sections 1.3.1 and 1.3.2).
(2) Remove the 2 screws ⑤ and 4 screws ⑥.

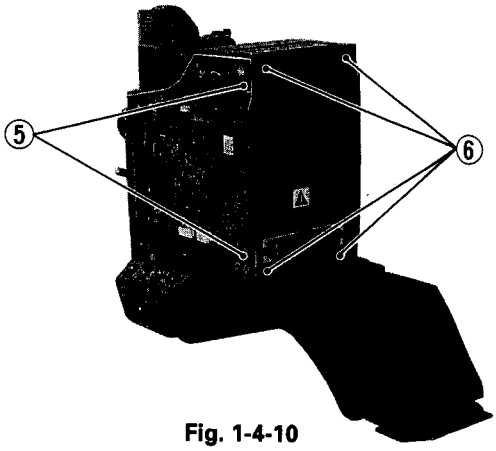


Fig. 1-4-10

(3) Open the rear frame Ⓓ and IF board in the direction of the arrow shown in the figure.
The diagnostics of the IF board can be performed in this condition.

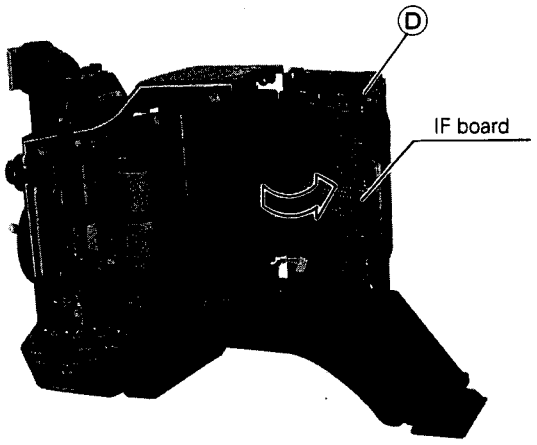


Fig. 1-4-11 IF Board

1.5 FUNCTIONS OF THE DIP SWITCH

DIP switch S12 on the CP board in the camera head have the functions as described below.

Symbol	No.	Switch Name	Function	Initial Setting	Ref. Sec.
S12	1	Adjustment mode	Adjustment mode ON/OFF	OFF	2.3
	2	Check mode	Check mode ON/OFF	OFF	1.5.2
	3	Service menu	Service menu ON/OFF	OFF	1.5.3
	4	Automatic iris	Automatic iris ON/OFF when using the remote controller	OFF (Automatic)	1.5.4
	5	Remote control unit setting SW	Refer to the section 1.12.	ON	1.12
	6	Not used	—	OFF	—
	7	Setup (Only NTSC model)	Setup ON/OFF	OFF (with set up)	1.5.5
	8	Function setting (Only NTSC model)	Initial setting of camera's function	ON	1.5.6

Table 1-5-1 Functions of S12 on the CP board

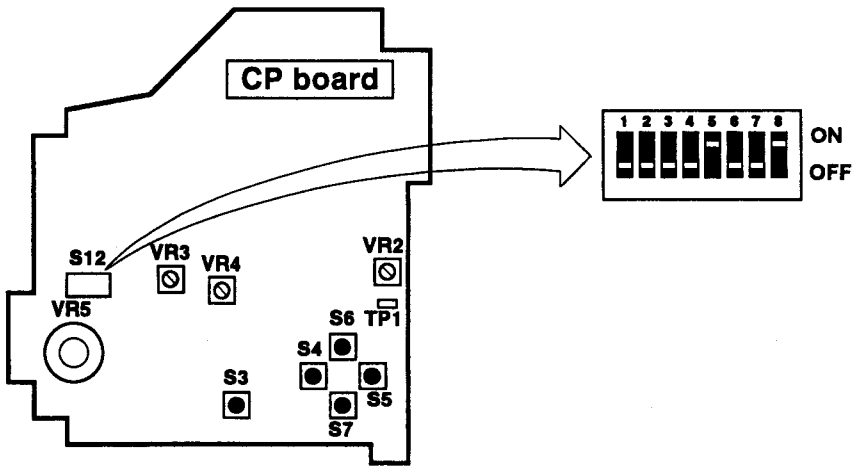


Fig. 1-5-1 Switch Layout

1.5.1 Adjustment mode (S12-1)

Setting S12-1 to ON initiates the adjustment mode.
For details of this mode, please read section "2.2 ADJUSTMENT PROCEDURE IN THE ADJUSTMENT MODE".

1.5.2 Check mode (S12-2)

Setting S12-2 to ON initiates the check mode.
This mode is used to display the auto white and auto iris adjustment data which stored in CPU, as well as to perform some electrical adjustments.

```
---CHECK MODE---
R-G          : **
B-G          : **
R GAIN LEVEL : **
B GAIN LEVEL : **
PEAK         : **
APL          : **
NAM ERROR    : *
GAIN         *dB
```

Fig. 1-5-2 Check Mode Screen

- **R-G/B-G**
  This shows the R, G, B signal input to the CPU to control white balance with R-G and B-G. These should be adjusted for white balance. See 2.7.1 Adjustment of white balance for details.
- **R GAIN LEVEL/B GAIN LEVEL**
  These two items of data show the control signal level for a white balance of the R and B CHs.
- **PEAK**
  This data shows the peak-hold value of the signal in 1 vertical scanning period.
- **APL**
  This data shows the average value of video signal level.
- **NAM ERROR**
  This data shows the NAM value for use in the auto iris control.
- **GAIN**
  This data shows the GAIN value that is set by the [GAIN] switch located on the right side of the main unit. When the full automatic shooting mode is operated, "ALC" is shown.

1.5.3 Service menu (S12-3)

Setting S12-3 to ON initiates the service menu. The items in the service menus are selected by moving the cursor with the [ITEM] button located on the right side of the main unit (note that this operation method is different from the adjustment mode). The service menu items are as shown below.

```
----SERVICE MENU----
▷CCD CORRECT      ON
 ERROR DETECT     START
 VSUB B           *.* V
 VSUB G           *.* V
 VSUB R           *.* V
 WHITE CLIP       ***%
 SVP1 RAMP MODE
 SVP2 RAMP MODE
```

Fig. 1-5-3 Service Menu Screen

- **CCD CORRECT ON**
  This item is used to switch the blemish compensation (See section 7.4.3 in detail) ON and OFF. It can be switched ON/OFF by placing the cursor on this item and pressing the [UP] or [DOWN] button.
  This mode is always reset to ON when the power supply is on. The OFF setting is only available until the power supply turns off after setting this mode OFF at the [SERVICE MENU].

Setting	Function	Factory Setting
ON	Blemish compensation is activated	ON
OFF	Blemish compensation is inactivated	

- **ERROR DETECT START**
  This item detects the blemishes and sets the position to be corrected. See section 2.9 "Blemish compensation" for details.
- **V SUB B/V SUB G/V SUB R**
  These items show the V-SUB voltage values and are used in their adjustments. See section 2.8.1 "V-SUB voltage adjustments" for details.
- **WHITE CLIP**
  The data show the White Clip level for video output signal. See 2.6.1 WHITE CLIP adjustment for details.
- **SVP1/SVP2 RAMP MODE**
  Placing the cursor on one of these items outputs the ramp waveforms SVP1 (IC401) or SVP2 (IC701) respectively. These ramp waveform outputs allow checking of the digital processor.

1.5.4 Automatic iris (S12-4)

This is an auto-iris ON/OFF switch that sets the iris of the lens automatically to "AUTO" while the remote control unit is in use. For the manual operation of the iris adjustment of the lens while the remote control unit is connected or for the iris adjustment of the MD lens remote control, this switch should be set to "ON" (without using the automatic function).

1.5.5 Setup (S12-7 : Only NTSC model)

Setting S12-7 to ON/OFF allows to select whether the camera output signal is to be with setup or not. The factory setting is OFF for with the setup. The signal level does not change by changing the position of this switch. (Adjustment after switching is not necessary).

1.5.6 Function setting (S12-8 : Only NTSC model)

The initial setting described in table 1-5-3 will be switched according to the setting of S12-8.

Function		S12 – 8	
		OFF	ON
GAIN switch	•	0 dB	0 dB
	••	+6 dB	+9 dB
	•••	+9 dB	+18 dB
V. SCAN		60.5 – 249.7 Hz	60.5 – 1966.7 Hz
ALC	GAIN	0 to +12 dB	0 to +18 dB
	EEI	1/60.5 to 1/249.7s	1/60.5 to 1/249.7s
Time display		AM 12 : 00 : 00	12 : 00 : 00AM
Date display		Year/Month/Date	Date/Month/Year

Table 1-5-3 Functions of S12 – 8

The GAIN switch can be set with the [ADVANCED MENU] and the date display can be set with the [MAIN MENU].

1.5.7 Remote control unit setting switch (S12-5)

When the camera is connected with the remote control unit, this switch need to be set. See 1.12 CONNECTION WITH REMOTE CONTROL UNIT, RM-P200/RM-P300 for more details.

1.6 EEPROM

IC7 on the CP board is an EEPROM (electrically erasable and programmable read-only memory), serving to store the data as below.
If the EEPROM fails and has to be replaced, set the data as below.

- Adjusted values with [ADJUSTMENT MODE].
- Setting details for [MAIN MENU] and [ADVANCED MENU]
- Address data of blemish position
- Auto white balance data (AUTO1/AUTO2)
- V-SUB voltage data

1.7 TIME/DATE GENERATOR and S-RAM BACKUP BATTERY

The camera incorporates a time/date generator (IC8) on the CP board to output data for the clock operation and recording the accumulation of hours.
A lithium battery (BT1) is used as backup power for the time/date generator and the S-RAM, so that the data is maintained while the camera power is OFF.
The following data is written in the S-RAM (IC3).

- Time/date display condition set with the [SET (TIME/DATE)] button.
- Whether "seconds" is displayed or not.
- Switching between 12H and 24H display.
- Date display condition.

When the clock fails to show the hours correctly, the lithium battery should be replaced using the procedure as described below.

(1) Remove the right side cover (see section 1.3.1).
(2) Locate the lithium battery on the CP board.
(3) Remove the battery by pushing it temporarily downward (Fig. 1-7-1a) then sliding it in the direction of the arrow (Fig. 1-7-1b).

Fig. 1-7-1a

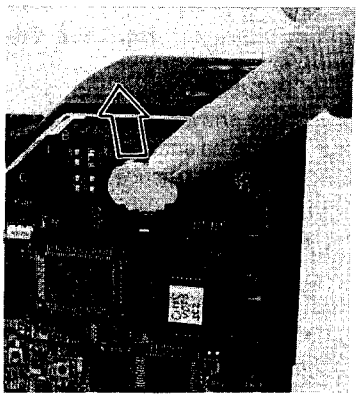


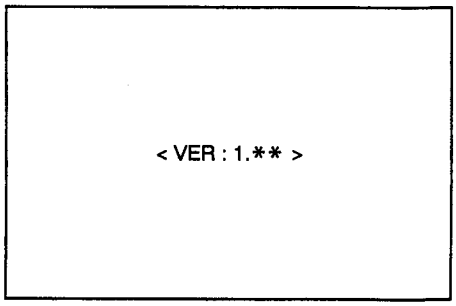
Fig. 1-7-1b

(4) Attach a new battery by reversing the removing procedure above.

Symbol	Model No.
BT1	CR2032SN

1.8 DISPLAYING VERSION NUMBERS OF THE ROMS

When the power is switched ON by the [OPERATE] switch while also pressing the [MENU] button, the version number of the ROM (IC2 on the CP board) is indicated on the viewfinder screen for 5 seconds.



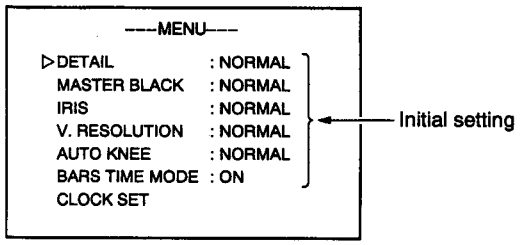
<Viewfinder screen>

1.9 SYSTEM RESET

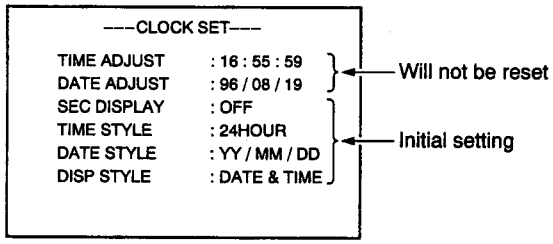
When the power is switched ON by the [OPERATE] switch while also pressing the [SET] button, the system is reset and the data set at the MENU screen returns to the initial setting.
The items to be initialized with the system reset are shown below.

<Items which are set to be initialized>

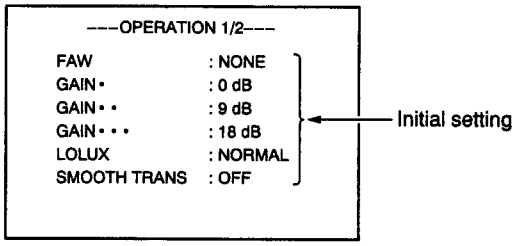
- **Setting data of [MAIN MENU]**

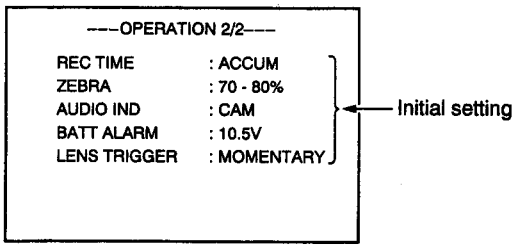


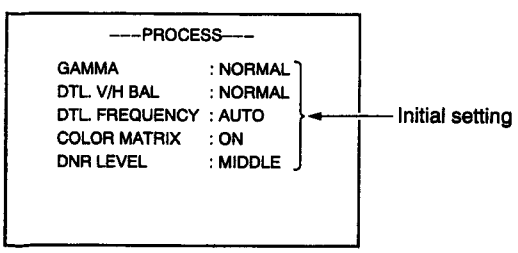
- **[CLOCK SET] screen**
  Date and time set at the [TIME ADJUST] and [DATE ADJUST] will not be reset.



- **[ADVANCED MENU] screen**
  The details for FILE A and FILE B set at the [SCREEN FILE] which will be initialized.







- **Other initial setting**

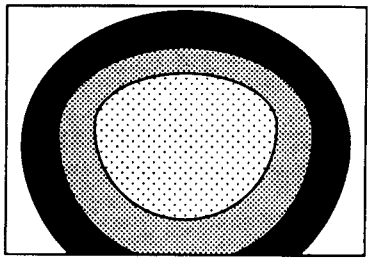
Functions	Initial setting values
SHUTTER	1/100 (NTSC), 1/120 (PAL)
DISP STATUS	Status Mode 0
SAFETY ZONE	Mode 0 (OFF)
LOLUX	OFF
FAS	OFF
V.SCAN	1/100.2 (NTSC), 1/120.1 (PAL)
Display of date/time	OFF (not displayed)

<Items of which the setting will not be initialized>

- **Setting data for [CHECK MODE], [SERVICE MENU] and [ADJUSTMENT MODE].**
- **Memory data of AUTO WHITE BALANCE**
- **Settings for mechanical switches**

1.10 MULTIZONE DESIGN

The exposure detection system used for the Auto Iris is based on a multizone pattern that assigns a priority according to the probable important subject area.
Further from the center zone of these fields the importance of a bright object is less, and therefore will not disturb the automatic settings unnecessarily.



Multi Zone Iris Detection

<How to confirm the multi zone>

(1) To visualize the multi zone in the viewfinder and monitor screen, hold the [ITEM] button on the right side while turning power on to the camera, with the [OPERATE] switch.
(2) Turn off the camera to clear the display.

1.11 CONNECTION WITH RM-P270, TRIAXIAL UNIT

When automatic function which not available in the camera is activated by RM-P270, triaxial unit with local remote control, the all function may be locked. To avoid the problem, the EPROM (IC803 on RMT board) of triaxial should be updated.

Model	Affected serial number	New ROM
RM-P270U	#0086 and before.	PLSC1062-V1-3 or higher.
RM-P270E	#0092 and before.	PLSC1062-V1-3 or higher.

1.12 CONNECTION OF REMOTE CONTROL UNIT, RM-P200/P300

1.12.1 Connection of RM-P300

When camera is operated with RM-P300, the power may not be turned on or even turned on, then all function may be locked. This phenomena may happen depend on length of the cable and power consumption of lens and viewfinder. To avoid this, internal switches have to be set as follows.

1. Internal switches

Model	Switches	Initial setting
KY-D29	S12-5 on CP board	ON
PM-P300	S801 on RM board	OFF

2. Switches setting

Lens: A14 X 10 BERM, Viewfinder : VF-P550B

Cable Length(m)	20	50	100	150	200	220	250
S12-5	ON	ON	ON	ON	OFF	OFF	OFF
S801	OFF	OFF	ON	ON	ON	ON	ON

Lens: A14 X 10 BERM, Viewfinder VF-P115/VF-P116/VF-P400

Cable Length(m)	20	50	100	150	200	220	250
S12-5	ON	ON	ON	ON	ON	ON	ON
S801	OFF	OFF	OFF	OFF	ON	ON	ON

NOTE

- **The cable between KY-D29 and RM-P300 should be up to 250m.**
- **The big lenses, such as EFP lens can not be used.**

3. The function of the switches

- S12-5 on KY-D29
  There are two different power system in this camera. The one is power for CPU only and other one is for camera except CPU. The dip switch change the mode as follows.

S12-5	Mode of power supply
ON	Power supplied to CPU and others at the same time.
OFF	The power supplied to CPU first, and then, power do not supplied until the voltage from remote unit become 12 V.

- S801 on RM-P300
  The RM-P300 supply power to camera and change the voltage depend on length of cable. The switch changes initial voltage to the camera.

S801	Initial voltage
ON	18.5 V
OFF	15 V

1.12.1 Connection of RM-P200

Lens: A14 X 10 BERM, Viewfinder : VF-P400/VF-P115/VF-P116

Cable length	0 – 100m
S12-5	ON

NOTE

VF-P550, 5.5 inch viewfinder, can not be used with RM-P200.

SECTION 2
ELECTRICAL ADJUSTMENTS

2.1 REQUIRED EQUIPMENT FOR ELECTRICAL ADJUSTMENT

2.1.1 General instruments necessary for adjustment

(1) Lighting equipment (3200K, halogen lamp)

(2) DC voltmeter (A digital voltmeter is recommended.)

(3) Oscilloscope (2 or more channels, 100 MHz or higher bandwidth)

(4) Frequency counter

(5) Color monitor

(6) Waveform monitor

(7) Vectorscope:
1720SCH(NTSC)/1721SCH(PAL), 1780R(NTSC)/1781R(PAL) [Tektronix] or equivalent (An instrument having the SC-H measurement function is recommended.)

(8) Power supply: 12 V DC (using the AA-P250 AC power adapter or equivalent)

(9) Lens (A14x10BRM12 or equivalent)

(10) Camera adapter, KA-27 or Dockable VTR (see *Note)

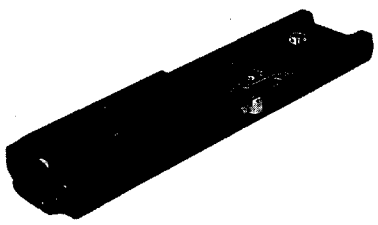
(11) Viewfinder: VF-P116 or equivalent

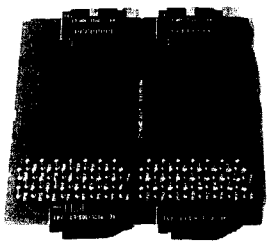
***NOTE**

The power to the camera head is supplied through the 50-pin connector on the rear.
Therefore, the Camera Adapter KA-27 or dockable VTR must be used to carry out adjustments.

2.1.2 Special implements required for adjustment

1	Tripod base	2	Extension board, 60-pin	3	Gray scale chart
(KA-510: accessory)		(Part No.:SCK2169)		(Part No.: GS2L)	





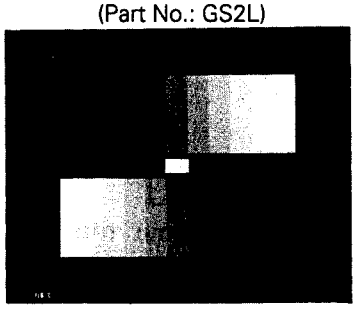
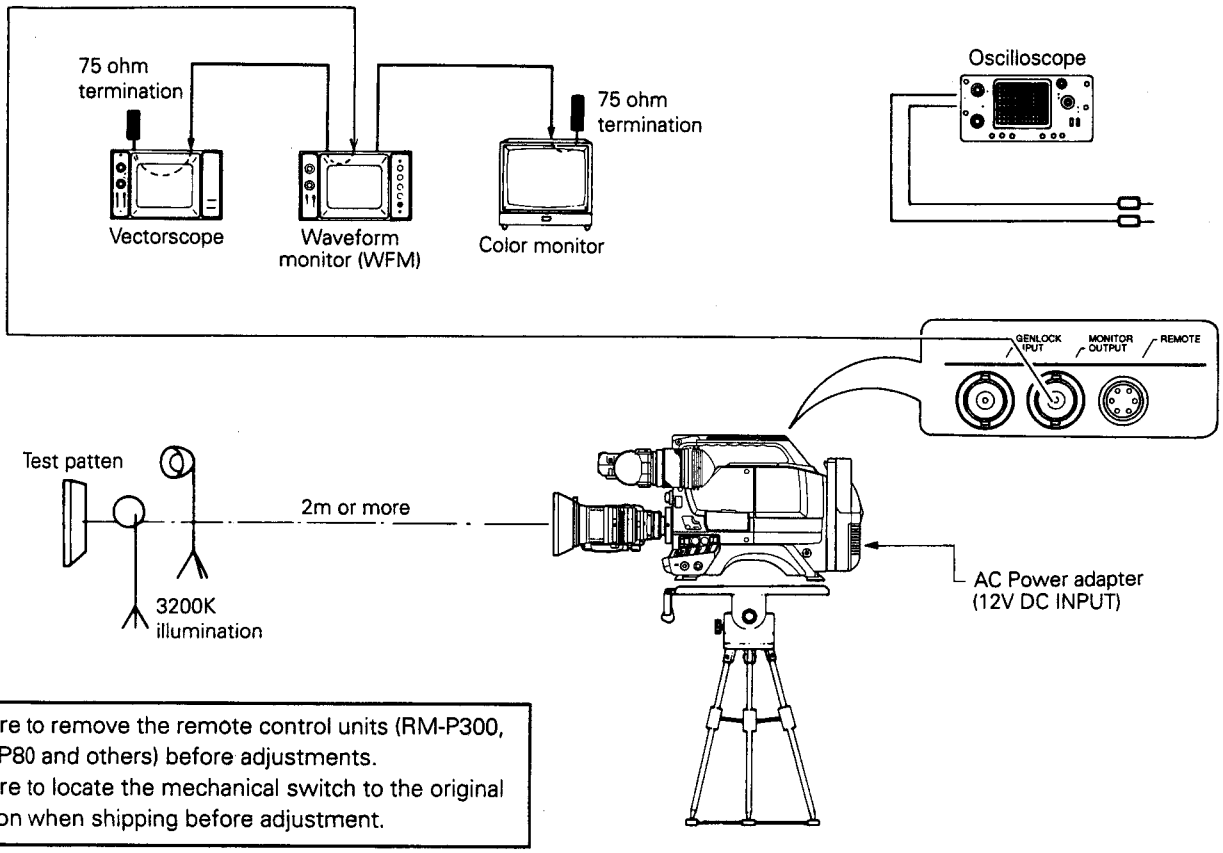


Fig. 2-1-1 Special inplements required for adjustment

2.1.3 Standard setup



- Be sure to remove the remote control units (RM-P300, RM-LP80 and others) before adjustments.
- Be sure to locate the mechanical switch to the original position when shipping before adjustment.

Fig. 2-1-2 Standard Setup

2.1.4 Potentiometers and test point layout

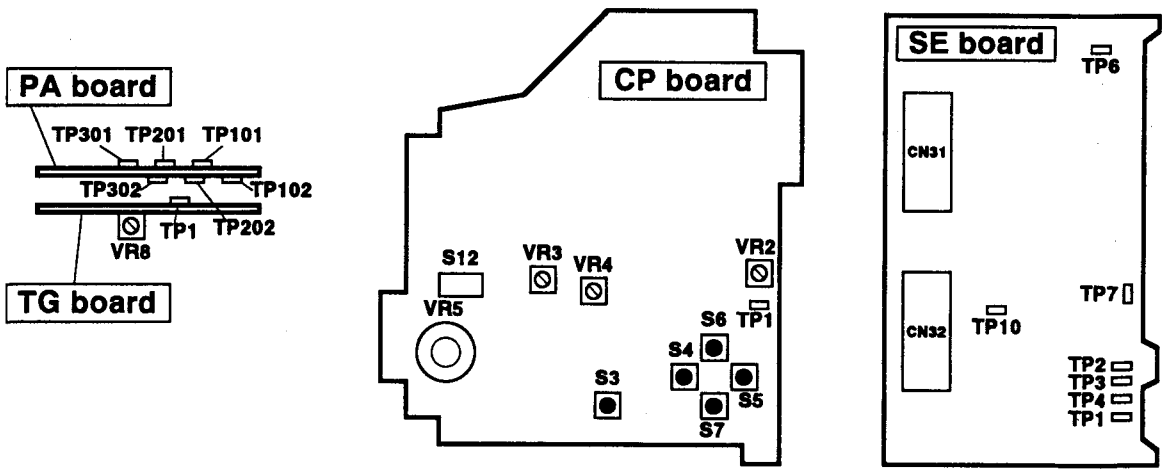


Figure 2-1-3 Potentiometers and Test Points on the Circuit Boards

2.2 ADJUSTMENT PROCEDURE IN THE ADJUSTMENT MODE

Some of the adjustment items should be adjusted in the "adjustment mode".

The adjustment mode allows to select an item on the monitor screen and adjust all of the required adjustments by using one potentiometer. The functions affected by each adjustment item are set automatically and the mechanical switch settings may be ignored. The adjustment procedure in the adjustment mode is described below.

(1) Remove the right side cover.(See Section 1.3.1)

(2) Set S12-1 on the CP board to ON to activate overlay display.

(3) Select the adjustment item by pushing S6 and/or S7 on the CP board. (A blinking cursor is displayed on the left of selected item.)

(4) Adjust the selected item with VR5 (AUDIO LEVEL control potentiometer) on the CP board. The adjusted value is displayed in the range between -128 and 127 or between -25 and 25. ("FET ADJUST" is displayed between 0.00 V and 1.00 V.)

(5) Setting S12-1 to OFF terminates the adjustment mode and returns the monitor to the normal screen.

When the cursor is moved to another item or S12-1 is set to OFF, the adjusted data is stored in EEPROM (IC7 on the CP board). The data is then delivered to the camera when the power is turned on.

***NOTE**

In the adjustment mode, the reference values are automatically set to necessory parameters when adjusting. Adjust items sequentially from top to bottom of the menu display.

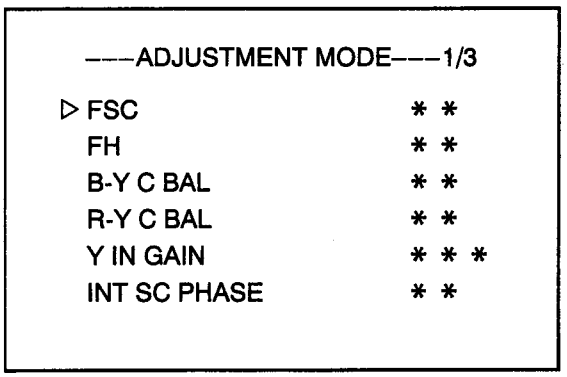


Fig. 2-2-1 Adjustment Mode Screen (1/3)

Adjustment Item	Page
FSC FH B-Y C BAL R-Y C BAL Y IN GAIN INT SC PHASE	1/3
B BLACK R BLACK MASTER BLACK DY SH B DY SH G DY SH R IN-GAIN G IN-GAIN B IN-GAIN R	2/3
FLARE G FLARE B FLARE R ABL ADJUST LOLUX BLACK B LOLUX BLACK R LOLUX M.BLACK FET ADJUST	3/3

Table 2-2-1 Adjustment Items in the Adjustment Mode

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure

2.3 SSG ADJUSTMENT

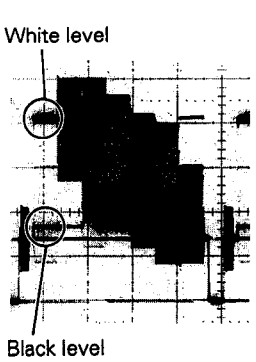
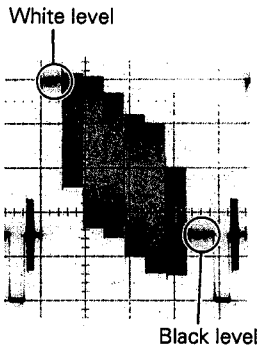
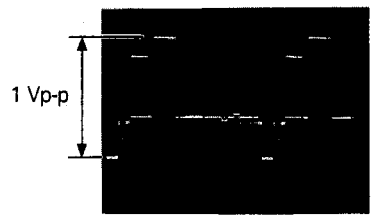
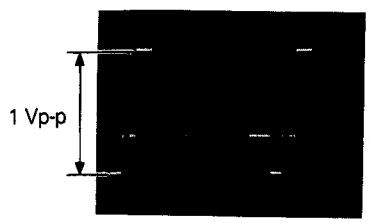
• **Confirm that no external sync is input to the camera.**					
1	Fsc adjustment	• Frequency counter	• ADJUSTMENT MODE ↓ "FSC" (Color bar output)	◎ TP10 [SE] ⓣ VR5 [CP] <NTSC> ☆ 3,579,545± 10Hz <PAL> ☆ 4,433,618± 10Hz	(1) Extend the SE board by using the extension board. (2) Initiate the adjustment mode and select "FSC". (3) Adjust so that the SC frequency at the measurement point becomes equal to the specified level.
2	FH adjustment	• Digital voltmeter	• ADJUSTMENT MODE ↓ "FH" (Color bar output)	◎ TP1 [SE] ⓣ VR5 [CP] ☆ 2.5 V	(1) Initiate the adjustment mode and select "FH". (2) Adjust so that the error voltage of FH.oscillator at the measurement point becomes equal to the specified level.

2.4 ERROR VOLTAGE ADJUSTMENT

• **Confirm that no external sync is input to the camera.**					
1	Error voltage adjustment for TG drive Osc.	• Digital voltmeter		◎ TP1 [TG] ⓣ E_{00}(VR8) [TG] ☆ 2.5 V	(1) Adjust so that the error voltage at the measurement point be comes equal to the specified level.
2	Error voltage adjustment for Area gate generate Osc.	• Digital voltmeter		◎ TP1 [CP] ⓣ E_{00}ADJ(VR2) [CP] ☆ 2.5 V	(1) Adjust so that the error voltage at the measurement point be comes equal to the specified level.

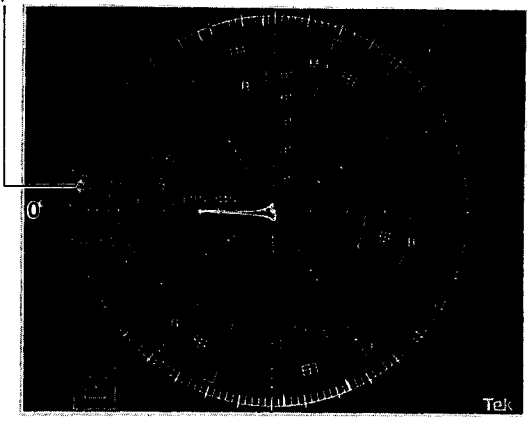
No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure

2.5 ENCORDER ADJUSTMENT

1	B-Y C BAL adjustment	• Oscilloscope (H-rate)	• ADJUSTMENT MODE ↓ "B-Y C BAL" (Color bar output)	◎ MONITOR OUTPUT terminal (75Ω terminated) ⓣ VR5 [CP] ☆ Min. carrier leaks	(1) Initiate the adjustment mode and select "B-Y C BAL". (2) Adjust to minimize the carrier leaks in the white and black sect ions of the color bars.
	 [NTSC]  [PAL]				
2	R-Y C BAL adjustment	• Oscilloscope (H-rate)	• ADJUSTMENT MODE ↓ "R-Y C BAL" (Color bar output)	◎ MONITOR OUTPUT terminal (75Ω terminated) ⓣ VR5 [CP] ☆ Min. carrier leaks	(1) Initiate the adjustment mode and select "R-Y C BAL". (2) Adjust to minimize the carrier leaks in the white and black sect ions of the color bars.
3	Y IN GAIN adjustment	• Oscilloscope (H-rate)	• ADJUSTMENT MODE ↓ "Y IN GAIN" (Color bar output)	◎ MONITOR OUTPUT terminal (75Ω terminated) ⓣ VR5 [CP] ☆ 1 Vp-p	(1) Initiate the adjustment mode and select "Y IN GAIN". (2) Adjust so that the Y level of compsite signal at the measurement point becomes equal to the specified level.
	 [NTSC]  [PAL]				

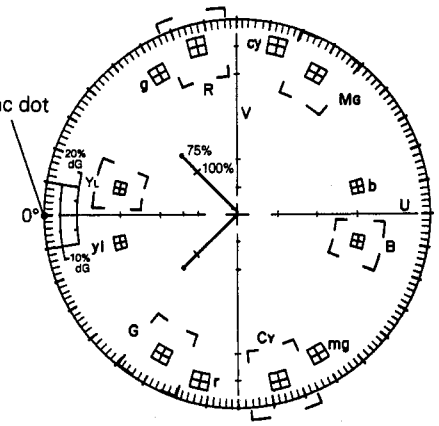
No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure
4	C GAIN adjustment	• Oscilloscope (H-rate)	• Color bar output	◎ MONITOR OUTPUT terminal (75Ω terminated) ⓣ VR1 [SE] <NTSC> ☆ 0.286 Vp-p <PAL> 0.3 Vp-p	(1) Output the color bar signal. (2) Adjust so that the output signal burst level at the measurement point becomes equal to the specified level.
5	INT SC PHASE adjustment	• Vectorscope with SC-H measuring facility	• ADJUSTMENT MODE ↓ "INT SC PHASE" (Color bar output)	◎ MONITOR OUTPUT terminal (75 Ω terminated) ⓣ VR5 [CP] ☆ 0°	**• This adjustment is usually not necessary to be done. Perform it only when it is required to do so, as after replacement of EEPROM. If the SC-H measuring instrument is not available, set the adjustment value to 0.** **• When perform the adjustment, confirm that no external sync is input to the camera.** (1) Set to the adjustment mode and select "INT SC PHASE". (2) Set the vectorscope to SC-H mode. (3) Adjust the PHASE knob for the phase adjustment of the vectorscope and set the burst signal to the correct position. (4) Read the position of the sync dot on the outer dial scale and perform the coarse adjustment with the SC COARSE VR on the left side of the main unit. (In adjustment mode, the SC COARSE VR functions as an internal SC COARSE control.) (5) Adjust with VR5 so that the sync dot is positioned in the measured value.

Sync dot



[NTSC]

Sync dot



[PAL]

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure

2.6 VIDEO PROCESS ADJUSTMENT

<table>
<tr>
<td>1</td>
<td>WHITE CLIP adjustment</td>
<td>•Video monitor</td>
<td>•SERVICE MENU
↓
" WHITE CLIP"</td>
<td>◎ MONITOR OUTPUT terminal
(75Ω terminated)
ⓣ UP(S6),DOWN(S7) button[CP]
☆ 110% (Initial setting)</td>
<td rowspan="2">
Note:
The white clip has been adjusted at 110% as initial setting. Re-adjust white clip level according to the procedure, when required.
(1) Set S12-SW3 on the CP board to ON to initiate the service menu.
(2) Place the cursor on "WHITE CLIP" using the [ITEM] button.
(3) While observing the monitor screen, adjust so that the value of "WHITE CLIP" becomes 98% to 110% using the UP/DOWN button.
(4) Set S12-SW3 to "OFF".
</td>
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<tr>
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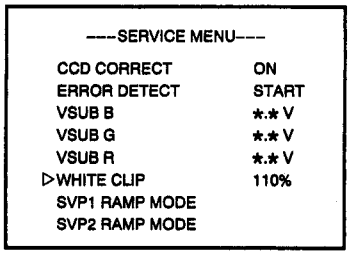

</td>
</tr>
<tr>
<td>2</td>
<td>B/R BLACK adjustments</td>
<td>• Oscilloscope (H-rate) or WFM
• Lens cap</td>
<td>•ADJUSTMENT MODE
↓
"B BLACK"
↓
"R BLACK"
(Iris closed)</td>
<td>◎ MONITOR OUTPUT terminal
(75Ω terminated)
ⓣ VR5 [CP]
☆ Min. carrier leaks (less than 15mVp-p [2 IRE])</td>
<td rowspan="2">
(1) Initiate the adjustment mode and select "B BLACK".
(2) Adjust to minimize the waveform carrier leak at the measurement point (less than 15 mVp-p).
(3) Select "R BLACK".
(4) Perform the same adjustment as step (2).
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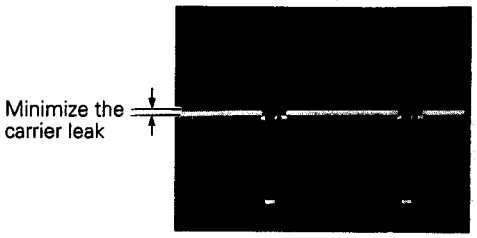
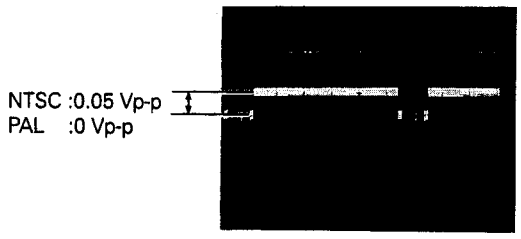
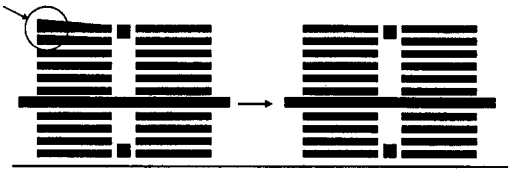
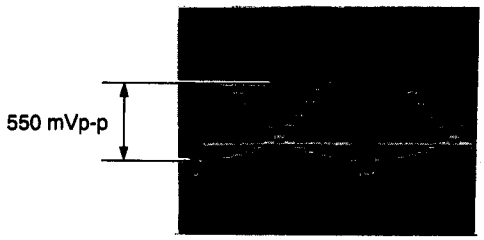
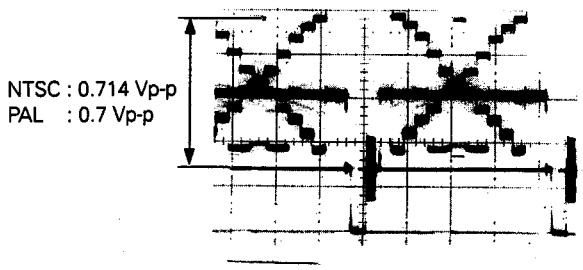
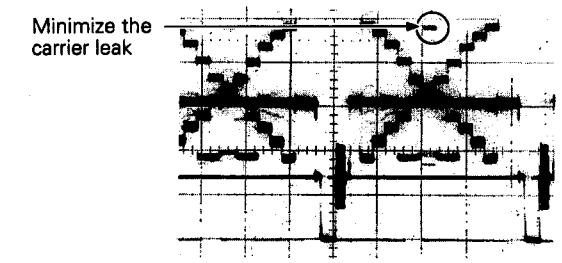
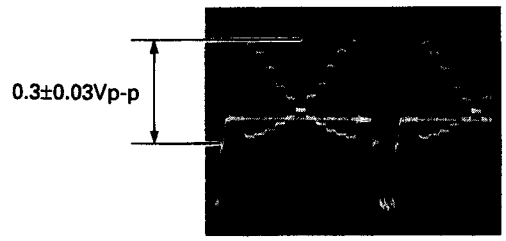
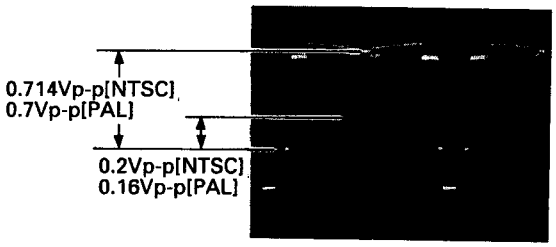
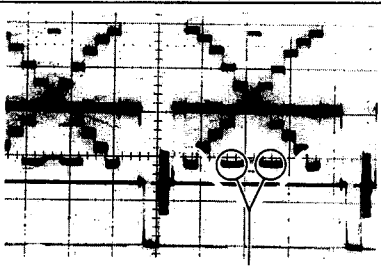
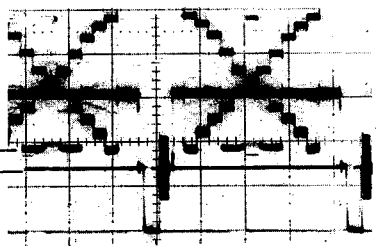


</td>
</tr>
<tr>
<td>3</td>
<td>MASTER BLACK adjustment</td>
<td>• Oscilloscope (H-rate) or WFM
• Lens cap</td>
<td>•ADJUSTMENT MODE
↓
"MASTER BLACK"
(Iris closed)</td>
<td>◎ MONITOR OUTPUT terminal
(75Ω terminated)
ⓣ VR5 [CP]
<NTSC>
☆ 0.05 Vp-p (7.5 IRE)
<PAL>
☆ 0 Vp-p</td>
<td rowspan="2">
(1) Initiate the adjustment mode and select "MASTER BLACK".
(2) Adjust so that the master black level at the measurement point is equal to the specified level.
</td>
</tr>
<tr>
<td colspan="4">


</td>
</tr>
</table>

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure
4	DYNAMIC SHADING adjustment	• Oscilloscope (V-rate) or WFM • Gray scale chart (Just scan)	• ADJUSTMENT MODE ↓ "DY SH B" ↓ "DY SH G" ↓ "DY SH R"	◎ MONITOR OUTPUT terminal (75Ω terminated) ⓣ VR5 [CP] ☆ Flat (horizontal) white level	(1) Initiate the adjustment mode and select "DY SH B". (2) Shoot the gray scale chart and set the lens iris so that the white level is equal to 0.57 Vp-p (80 IRE). (3) Adjust so that the white level, at the measurement point, of the gray scale chart becomes flat (horizontal). (4) Select "DY SH G" and adjust the G CH dynamic shading adjustment with the same operation as step (3). (5) Select "DY SH R" and adjust the R CH dynamic shading adjustment with the same operation as step (3).
					
5	IN GAIN adjustments	• Oscilloscope (H-rate, 10:1) • Gray scale chart (Just scan)	• ADJUSTMENT MODE ↓ "IN GAIN G"	◎ TP202 [PA] ⓣ Lens iris ☆ 550 mVp-p	(1) Initiate the adjustment mode and select "IN GAIN G". (2) Shoot the gray scale. (3) Adjust the lens iris so that the gray scale waveform level at the measurement point is equal to the specified level.
					
		• Oscilloscope (H-rate) or WFM • Gray scale chart (Just scan)		◎ MONITOR OUTPUT terminal (75Ω terminated) ⓣ VR5 [CP] <NTSC> ☆ 0.714 Vp-p (100 IRE) <PAL> ☆ 0.7Vp-p	(4) Adjust so that the gray scale waveform level at the measurement point is equal to the specified level.
					

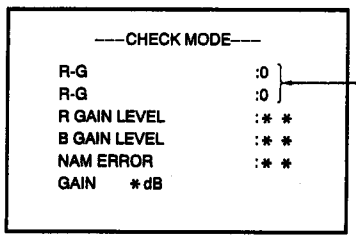
No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure
5	IN GAIN adjustments	• Oscilloscope (H-rate) or WFM • Gray scale chart (Just scan)	• ADJUSTMENT MODE ↓ "IN GAIN B" ↓ "IN GAIN R"	◎ MONITOR OUTPUT terminal (75Ω terminated) ⓣ VR5 [CP] ☆ Min. carrier leaks (less than 15 mVp-p [2 IRE])	(5) Initiate the adjustment mode and select "IN GAIN B". (6) Adjust to minimize the carrier leak at the measurement point of the white section of the gray scale chart. (7) Select "IN GAIN R" and perform the same adjustment as step (6).
					
		• Oscilloscope (H-rate, 10:1) • Gray scale chart (Just scan)		◎ TP101/TP201/TP301 [PA] ☆ 0.3 ± 0.03 Vp-p	(8) Check that the gray scale waveform level at each measurement point is 0.3 ± 0.03 Vp-p. If any level is out of specification, review "2.5 Encoder Adjustment" again and restart this adjustment from step (1). (9) Adjust "3. DYNAMIC SHADING adjustments" again (fine adjustments).
					

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (Ⓥ) Adjustment level (☆)	Adjustment procedure
6	FLARE adjustment	• Oscilloscope (H-rate) or WFM • Gray scale chart (Just scan)	• ADJUSTMENT MODE ↓ "FLARE G"	◎MONITOR OUTPUT terminal (75Ω terminated) ⓋVR5 [CP] <NTSC> ☆0.2Vp-p [28 IRE] <PAL> ☆0.16Vp-p	(1) Initiate the adjustment mode and select "FLARE G". (2) Shoot the gray scale chart and set the lens iris so that the cross point level is equal to 0.714 Vp-p [100 IRE](NTSC)/0.7Vp-p(PAL). (3) Adjust so that the level, at the measurement point, of the black section at the center of the gray scale chart becomes equal to the specified level.
					
		• Oscilloscope (H-rate) • Gray scale chart (Just scan)	• ADJUSTMENT ↓ "FLARE B" ↓ "FLARE R"	◎ MONITOR OUTPUT terminal (75Ω terminated) Ⓥ VR5 [CP] ☆ Min.carrier leaks (less than 20mVp-p)	(4) Select "FLARE B" and adjust to minimize the carrier leak of the black section at the center of the gray scale chart. (5) Select "FLARE R" and perform the same adjustment as step (5). (6) Set S12-SW1 to "OFF".
		 Minimize the carrier leak			
7	ABL (Auto Black Level) adjustment	• Oscilloscope (H-rate) or WFM • Gray scale chart (Just scan)	• ADJUSTMENT MODE ↓ "ABL ADJUST"	◎ MONITOR OUTPUT terminal (75Ω terminated) Ⓥ VR5[CP] <NTSC> ☆ 0.92 mVp-p [13±2 IRE] <PAL> ☆ 50 mVp-p	(1) Initiate the adjustment mode and select "ABL ADJUST". (2) Shoot the gray scale chart and set the lens iris so that the white level is equal to 0.714Vp-p[100 IRE](NTSC)/0.7Vp-p(PAL). (3) Adjust so that the level, at the measurment point, of black section at the center of the gray scale chart becomes equal to the specified level.
					

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure
8	BLACK adjustment	• Oscilloscope (H-rate) • Lens cap	• ADJUSTMENT MODE ↓ "FET ADJUST" ↓ "LOLUX BLACK B" ↓ "LOLUX BLACK R"	◎ MONITOR OUTPUT terminal (75Ω terminated) ⓣ VR5[CP] ☆ Min.carrier leaks	**Note:** **Put both side covers on to camera to shut the light off to CCD sensor.** (1) Close the lens with the lens cap. (2) Select "FET ADJUST" in the adjustment mode, and set the data to "1.00 V". (3) Select "LOLUX BLACK B". (4) Adjust to minimize the waveform carrier leak at the measurment point. (5) Select "LOLUX BLACK R". (6) Perform the same adjustment as step (2).
		• Oscilloscope (H-rate) • Lens cap	• ADJUSTMENT MODE ↓ "LOLUX M.BLACK"	◎ MONITOR OUTPUT terminal (75Ω terminated) ⓣ VR5[CP]	(7) Select "LOLUX M.BLACK". (8) Adjust so that the master black level, at the measurment point, of waveform carrier leak becomes 1/3 level of the maximum amplitude.
		• Oscilloscope (H-rate) or WFM • Gray scale chart (Just scan)	• ADJUSTMENT MODE ↓ "FET ADJUST" ↓ "LOLUX M.BLACK"	◎ MONITOR OUTPUT terminal (75Ω terminated) ⓣ VR5[CP] ☆ Cross point : <NTSC> 0.36 Vp-p [50 IRE] <PAL> 0.35 Vp-p	(9) Select "FET ADJUST" again. (10) Shoot the gray scale chart and set the lens iris so that the white level is equal to 0.714 Vp-p [100 IRE] (NTSC)/0.7 Vp-p (PAL). (11) Adjust so that the level, at the measurment point, of cross point of the gray scale chart becomes equal to the specified level. (12) Put the lens cap on and then, adjust (7) and (8) alternately to set Master Black level precisely.

2.7 CP ADJUSTMENT

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure
1	WHITE BALANCE adjustment	• Video monitor	• CHECK MODE	◎ MONITOR OUTPUT terminal (75Ω terminated) ⓣ B.ADJ (VR3) [CP] ☆ B-G : 0 ⓣ R.ADJ (VR4) [CP] ☆ R-G : 0	(1) Set S12-SW2 on the CP board to ON to initiate the check mode (2) Adjust VR3 so that the B-G value displayed on the monitor screen becomes "0". (3) Similarly, adjust VR4 so that the R-G value becomes "0". (4) Set S12 SW2 to "OFF".

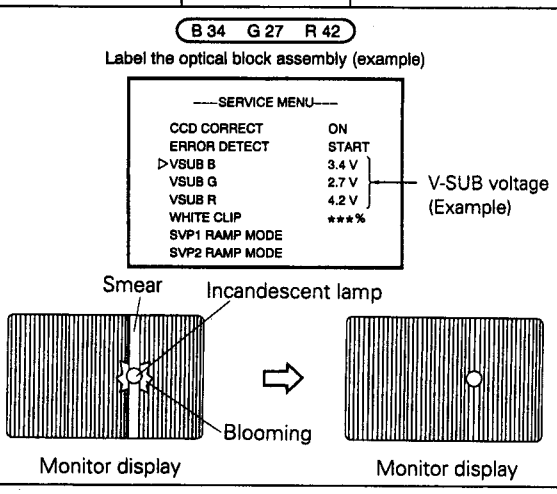


No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure

2.8 CCD DRIVER ADJUSTMENT

The following adjustments are required only when the optical block assembly is replaced.

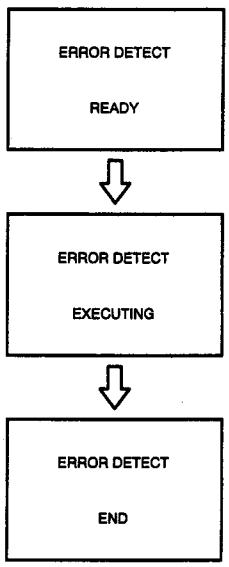
No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure
1	V-SUB voltage adjustments	• Video monitor • 40W incandescent lamp	• SERVICE MENU ↓ "V SUB B" ↓ "V SUB G" ↓ "V SUB R"	◎ MONITOR OUTPUT terminal (75Ω terminated) ⓣ VR5 [CP]	(1) Set S12-SW3 on the CP board to ON to initiate the service menu. (2) Place the cursor on "V SUB B" using the [ITEM] button. (3) While observing the monitor screen, adjust so that the V-SUB voltage of each channel becomes equal to the voltage value specified on the label of the optical block (tolerance ± 0.1 V). (4) Similarly, perform the "V SUB G" and "V SUB R" adjustments. (5) Take a shot of a 40 W incandescent lamp and make sure that here is no smear. (6) If there is any, fine-adjust the V-sub voltage at each channel until the smear disappears. (7) Set S12-SW3 to "OFF".



2.9 BLEMISH COMPENSATION

This camera incorporates a CCD blemish compensation function using an electronic memory. When the optical block assembly is replaced or in case a new blemish occurs, a renewed setting is required according to the following procedure. Note that the maximum number of compensated blemish is up to 13. (Compensated sequentially from the higher-level to the lower-lever blemishes).

No.	Item	Measuring instruments & Input signals	Mode	Measuring point (◎) Adjustment parts (ⓣ) Adjustment level (☆)	Adjustment procedure
1	Blemish compensation	• Video monitor	• SERVICE MENU ↓ "ERROR DETECT START"	◎ MONITOR OUTPUT connector (75Ω terminated)	**Before adjust blemish compensation, run the camera for more than 2 hours under an ambient temperature between +25 and +30°C.** (1) Set S12-SW3 on the CP board to ON to initiate the service menu. (2) Place the cursor on "ERROR DETECT START" using the [ITEM] button. (3) Press the [SET] button. (4) The monitor screen shows "ERROR DETECT READY" then "ERROR DETECT EXECUTING" and the blemish compensation starts. (5) When blemishes have been detected, the monitor shows "ERROR DETECT END" and the detected blemish data is compensated. (6) After completion of the blemish compensation, the monitor screen returns to the normal screen. (7) Set S12-SW3 to "OFF" and return the display to normal.



SECTION 3
CHARTS AND DIAGRAMS

■ SCHEMATIC DIAGRAM NOTES

- **Schematic safety precaution**
  ⚠ Parts are safety related parts.
  When replacing them, be sure to use the specified parts.

- **Voltage and waveform measurements**
  Voltage: Measured with digital voltmeter in DC range; iris closed.

  Waveform: Gray scale illuminated at more than 4000 lux at 3200K lighting.

- **Unit of value**
  Unless otherwise specified
  1) Resistance is in Ω (1/6 W)
  2) Capacitance in μF
  3) Inductance in μH

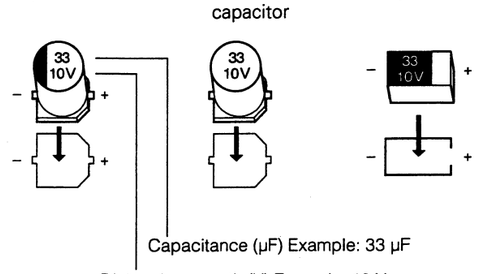
■ REPLACING SURFACE MOUNT "CHIP" COMPONENTS

- Some resistors, shorting jumpers (0 Ω resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.

- Chip resistors used in some circuits are of high precision type having little error in resistance.
  To demonstrate the full capacity of this set, place an order for proper parts referring to the diagrams and parts lists in the sections 5.

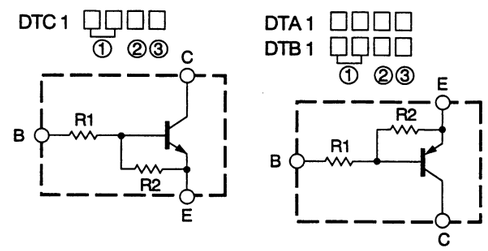
- Polarities of chip electrolytic capacitors and chip tantalum capacitors used in this model are as illustrated below.
  Polarities indicated by silk-screen printing on circuit boards are also shown below. When replacing such parts, make sure of polarities.

• Electrolytic capacitor • Non-polarized electrolytic capacitor • Tantalum capacitor



■ CHIP PARTS PIN ARRANGEMENT

[1] Digital transistors



① Two digits show resistance of R1 in abbreviation.

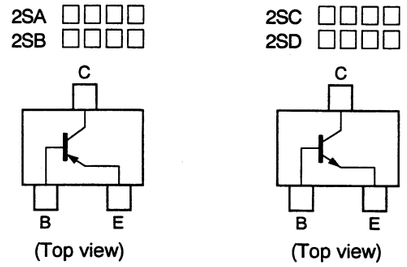
43 : 4.7 kΩ
14 : 10 kΩ
24 : 22 kΩ
44 : 47 kΩ

② Roman letter show the resistive ratio between R1 and R2 in abbreviation.

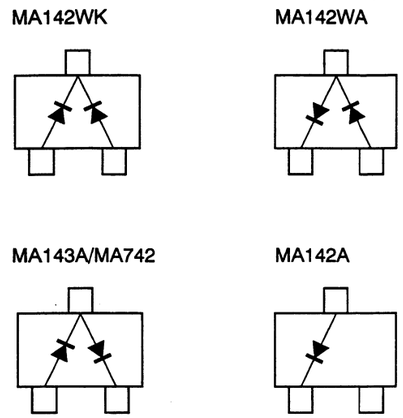
E : R2/R1 = 1/1
Y : R2/R1 = 5/1
W : R2/R1 = 2/1
X : R2/R1 = 1/2
T : R2 is opened.

③ Symbol the shape of resistor in abbreviation.

[2] Chip transistors

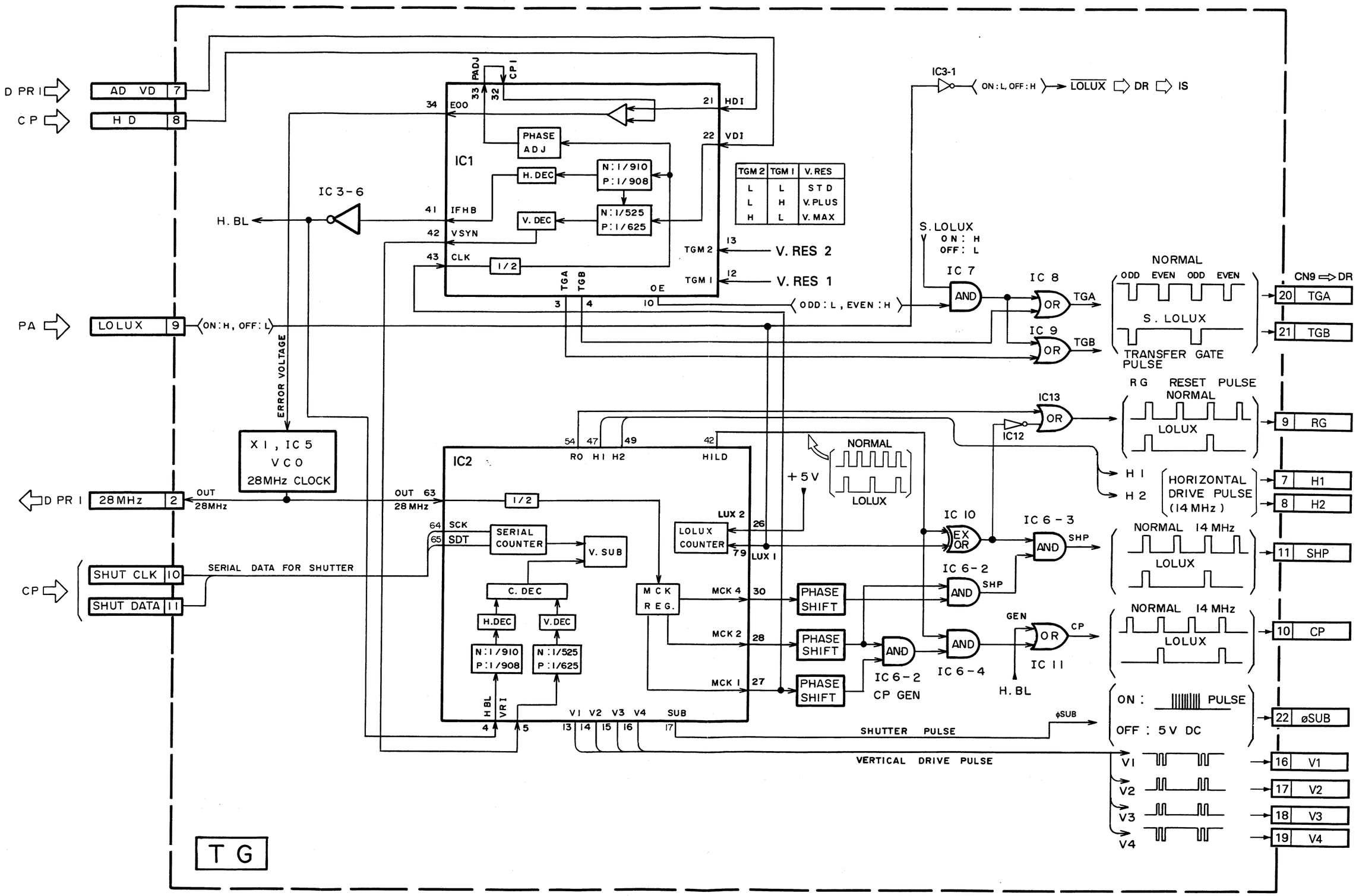


[3] Chip diodes



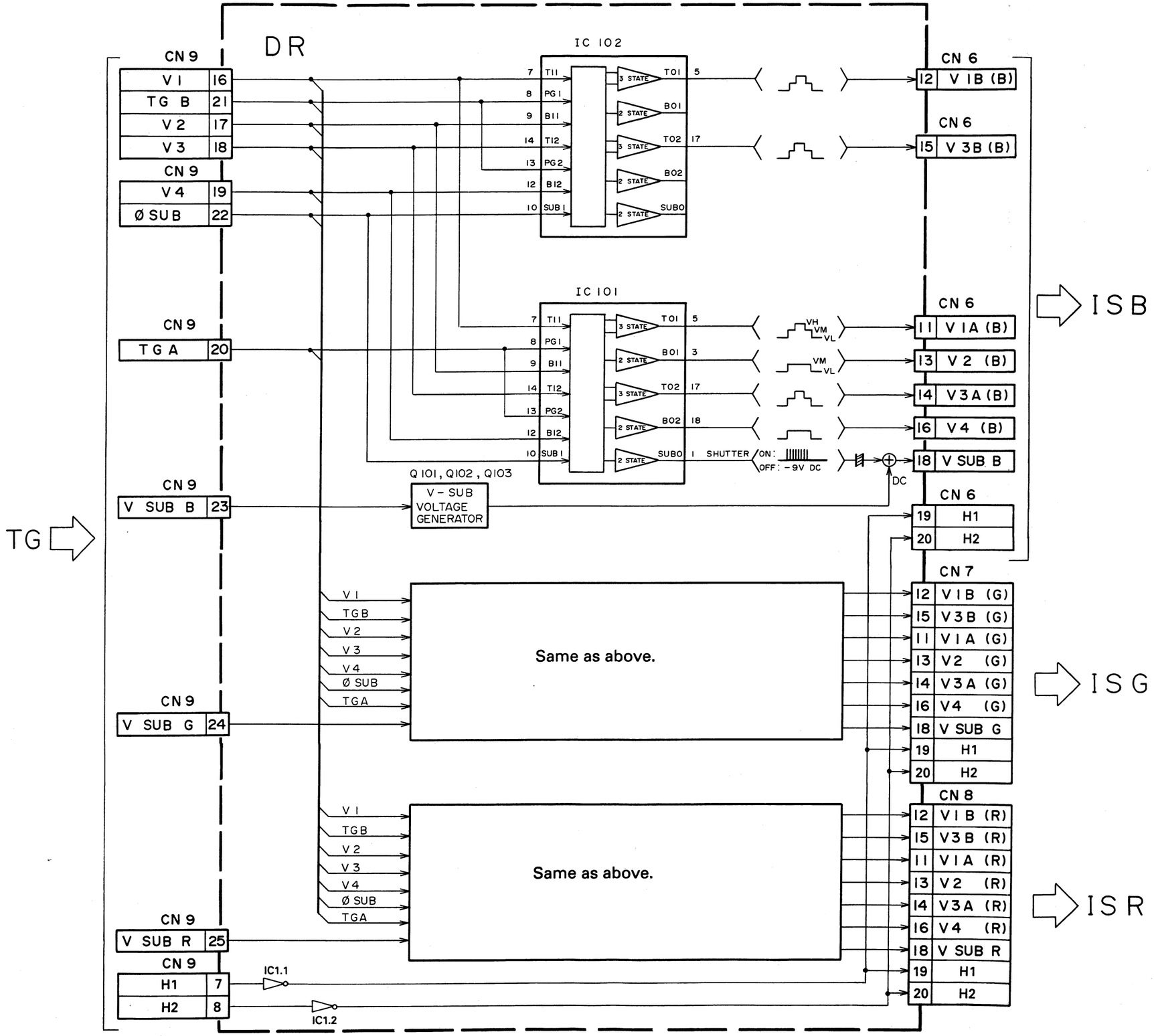
3-1

3.1 TG BOARD BLOCK DIAGRAM

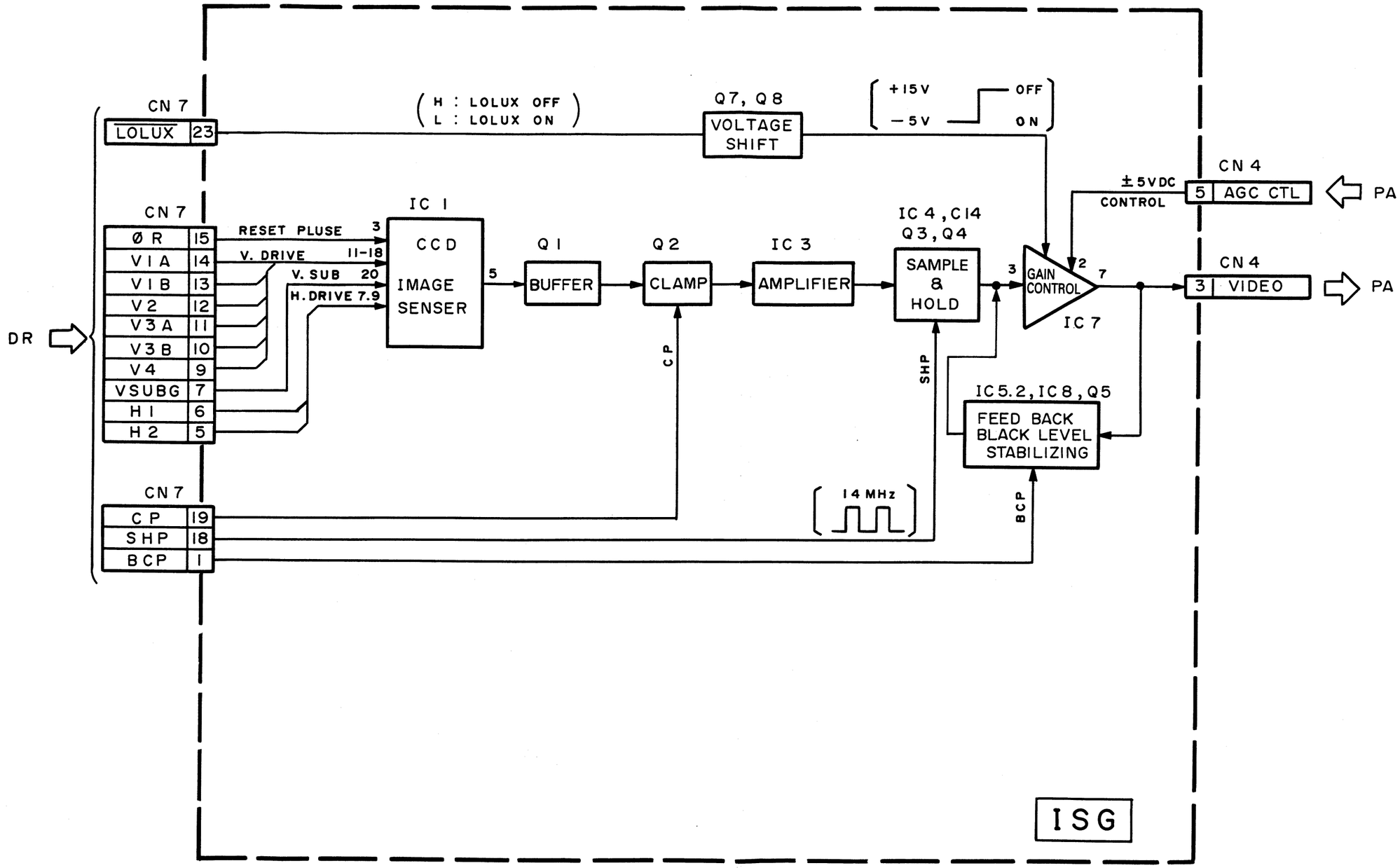


3-2

3.2 DR BOARD BLOCK DIAGRAM

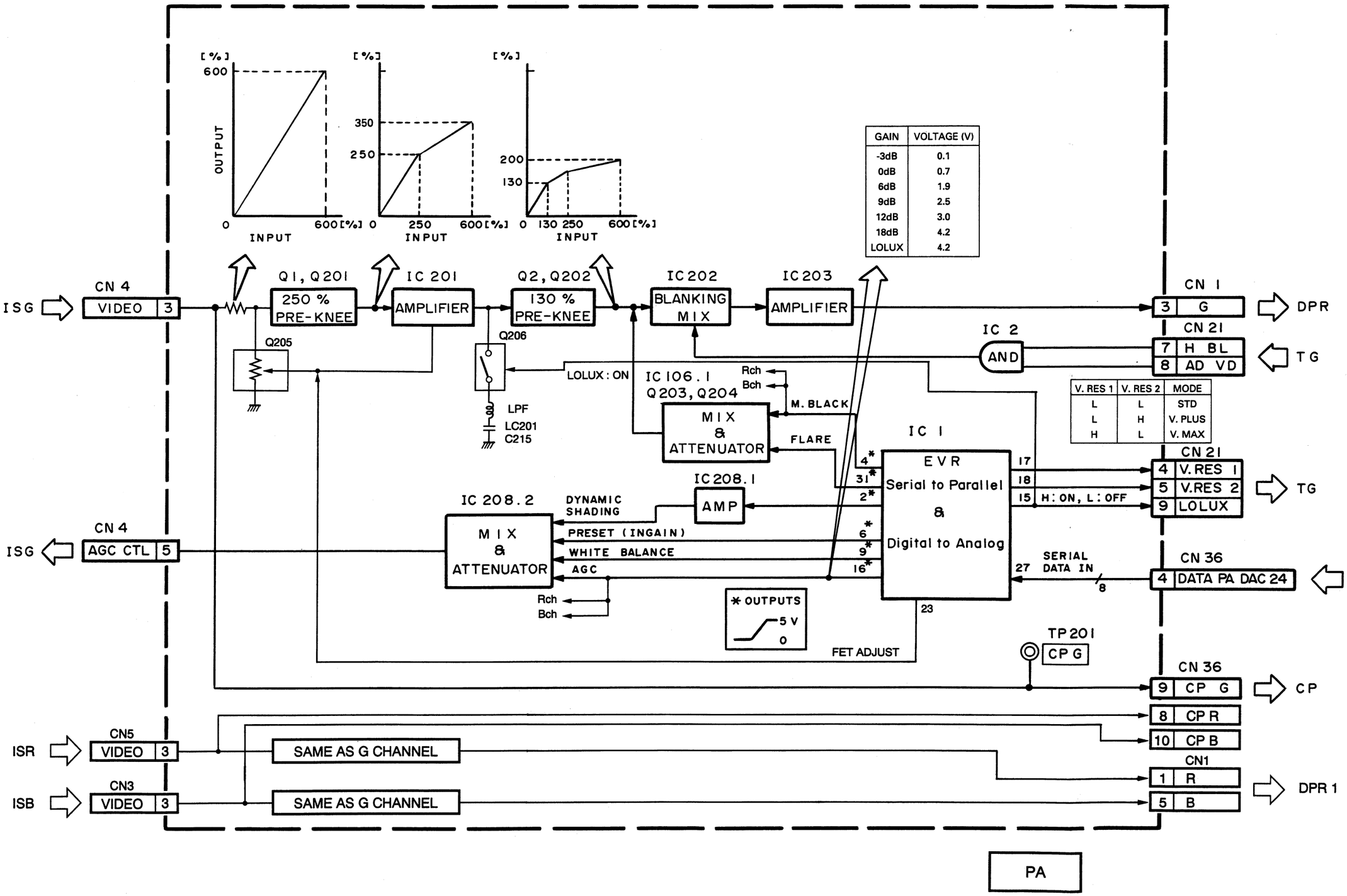


3.3 IS BOARD BLOCK DIAGRAM

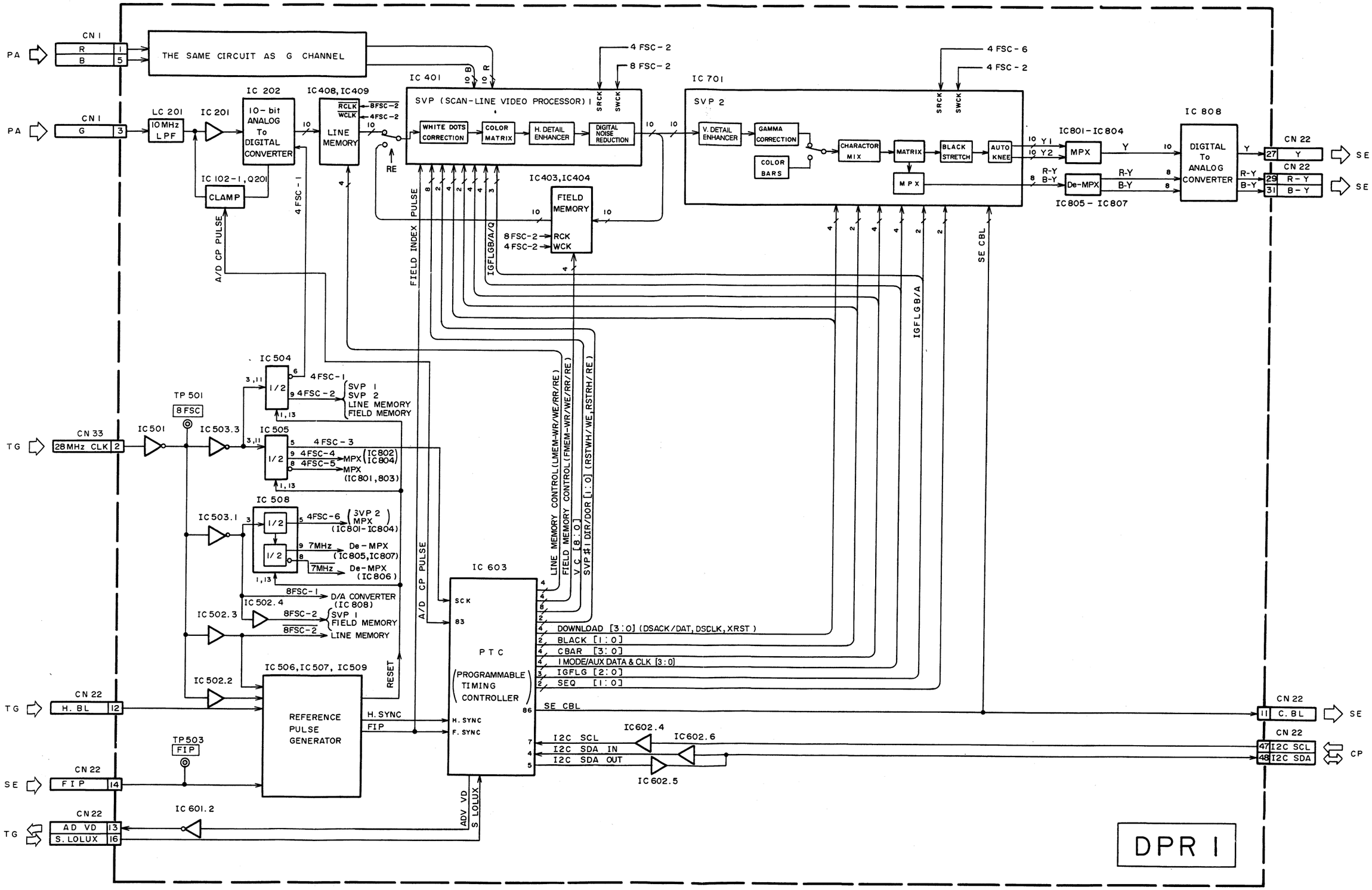


3-4

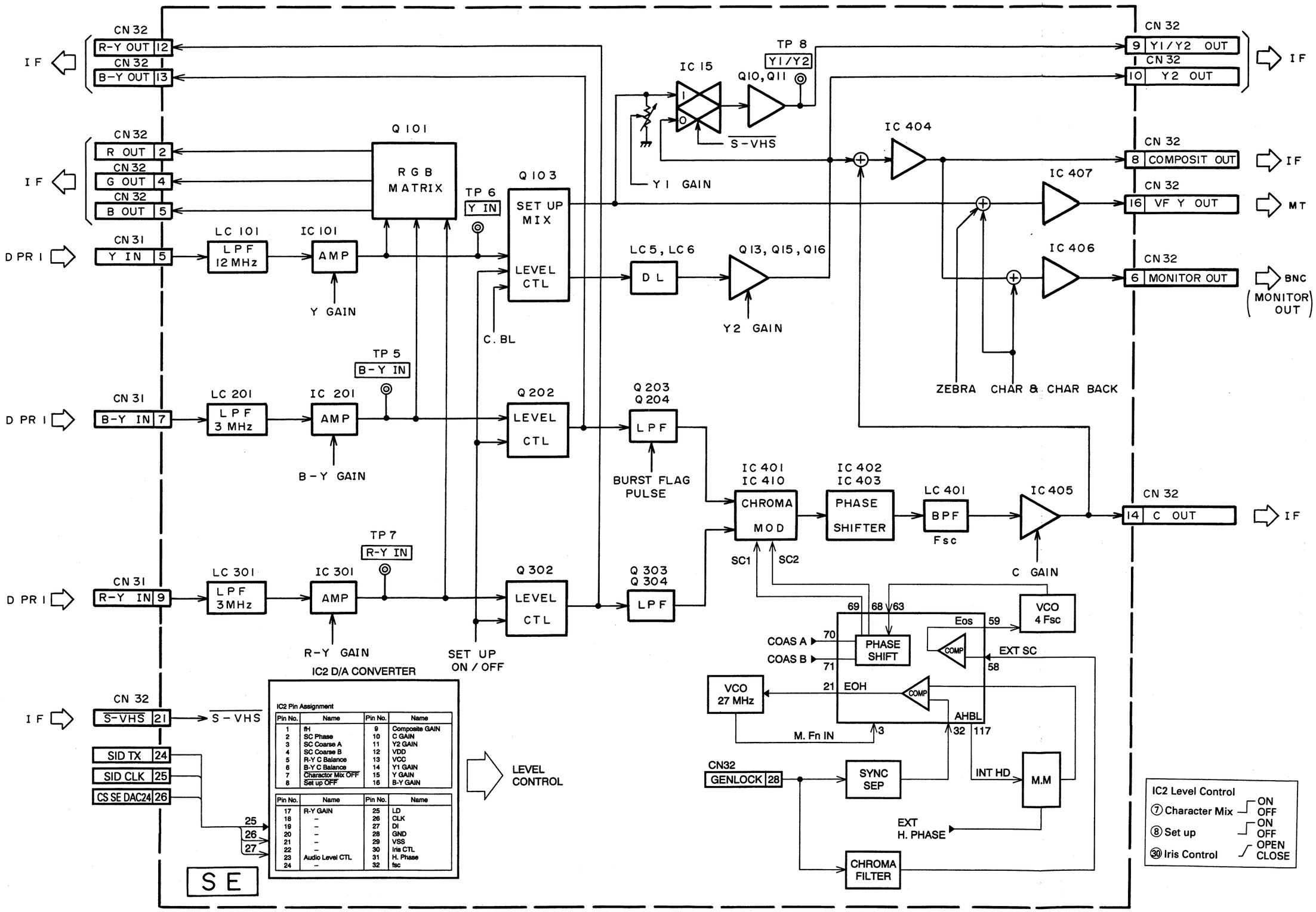
3.4 PA BOARD BLOCK DIAGRAM



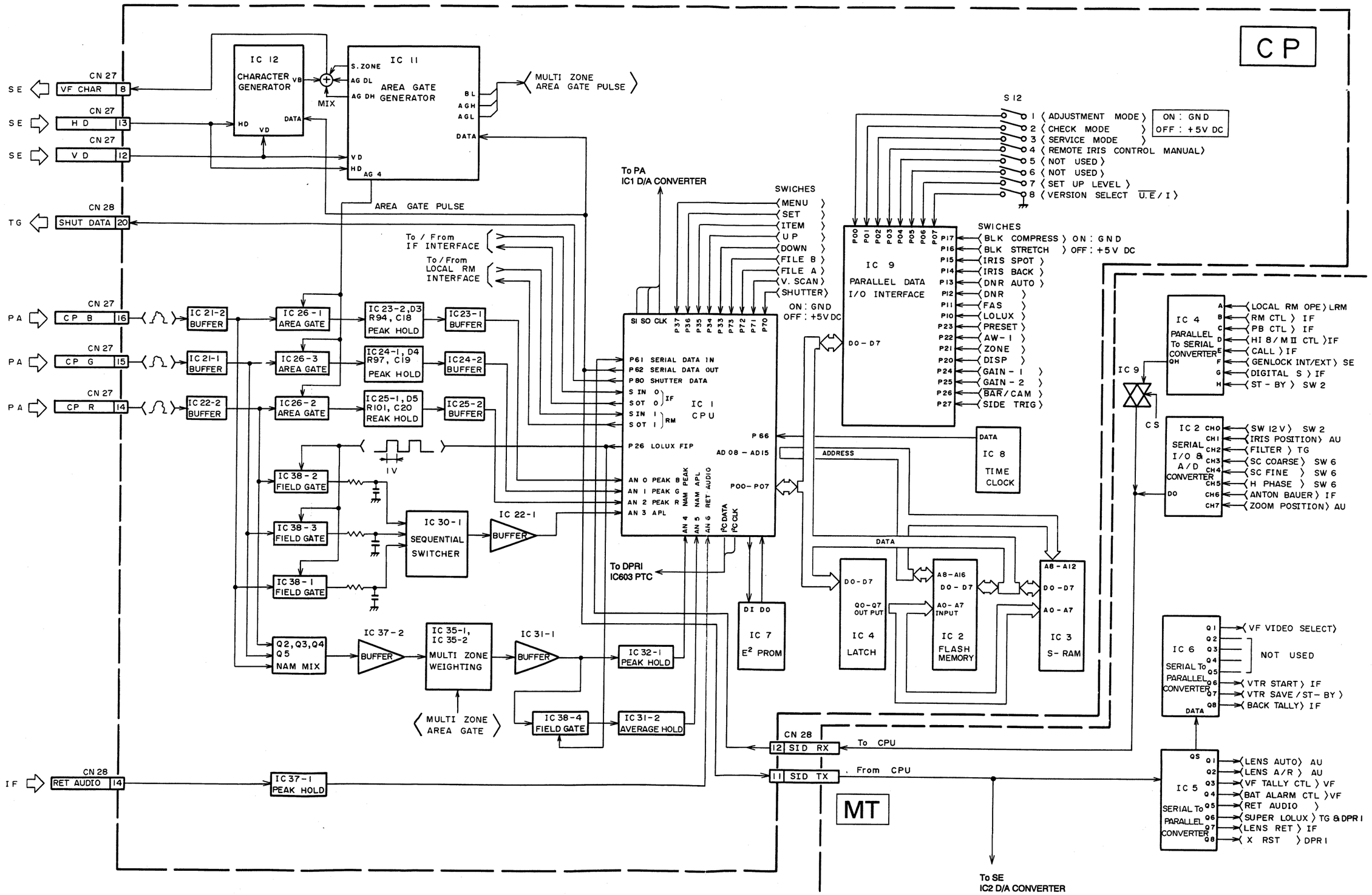
3.5 DPR1 CIRCUIT BOARD



3.6 SE BOARD BLOCK DIAGRAM

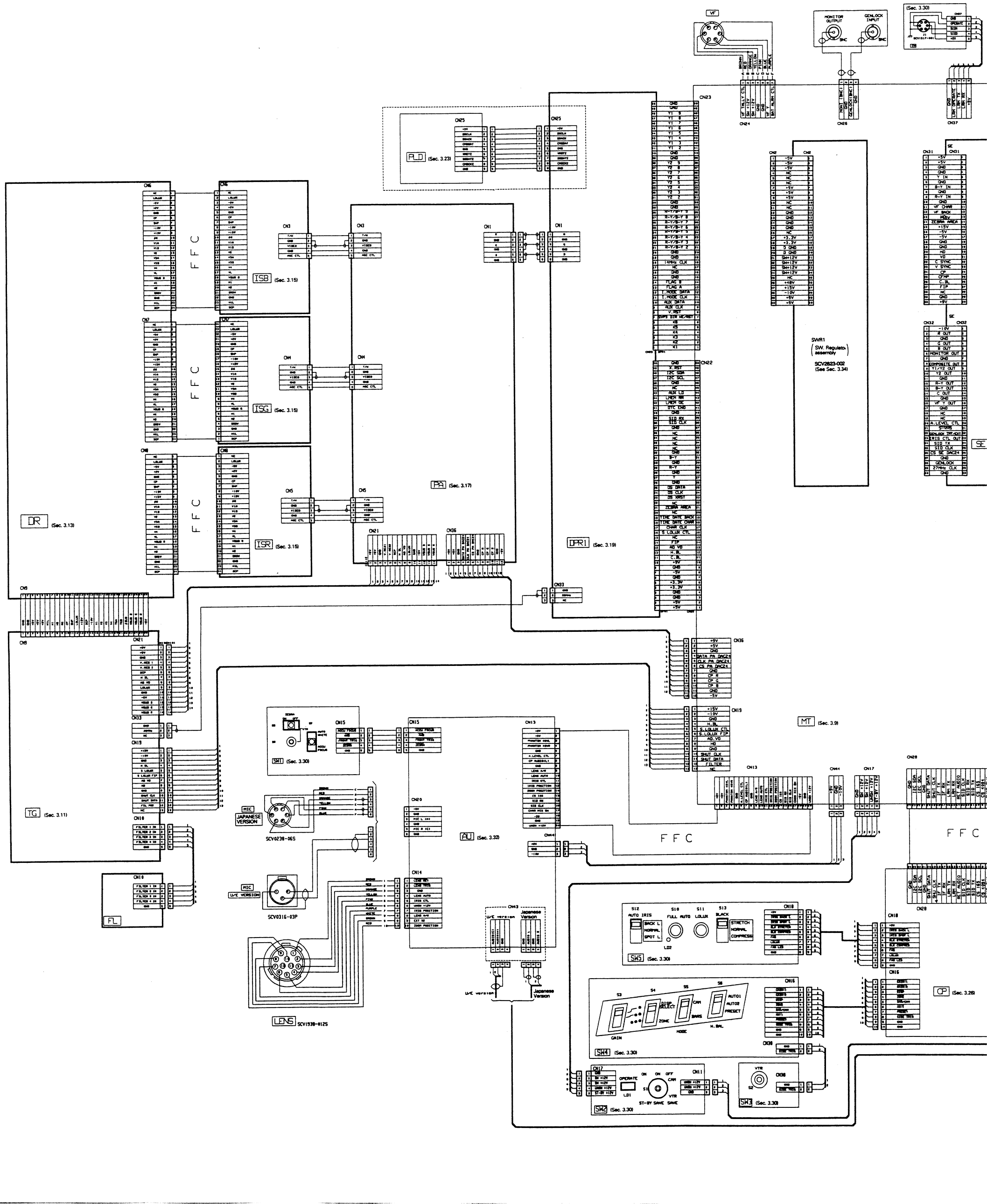


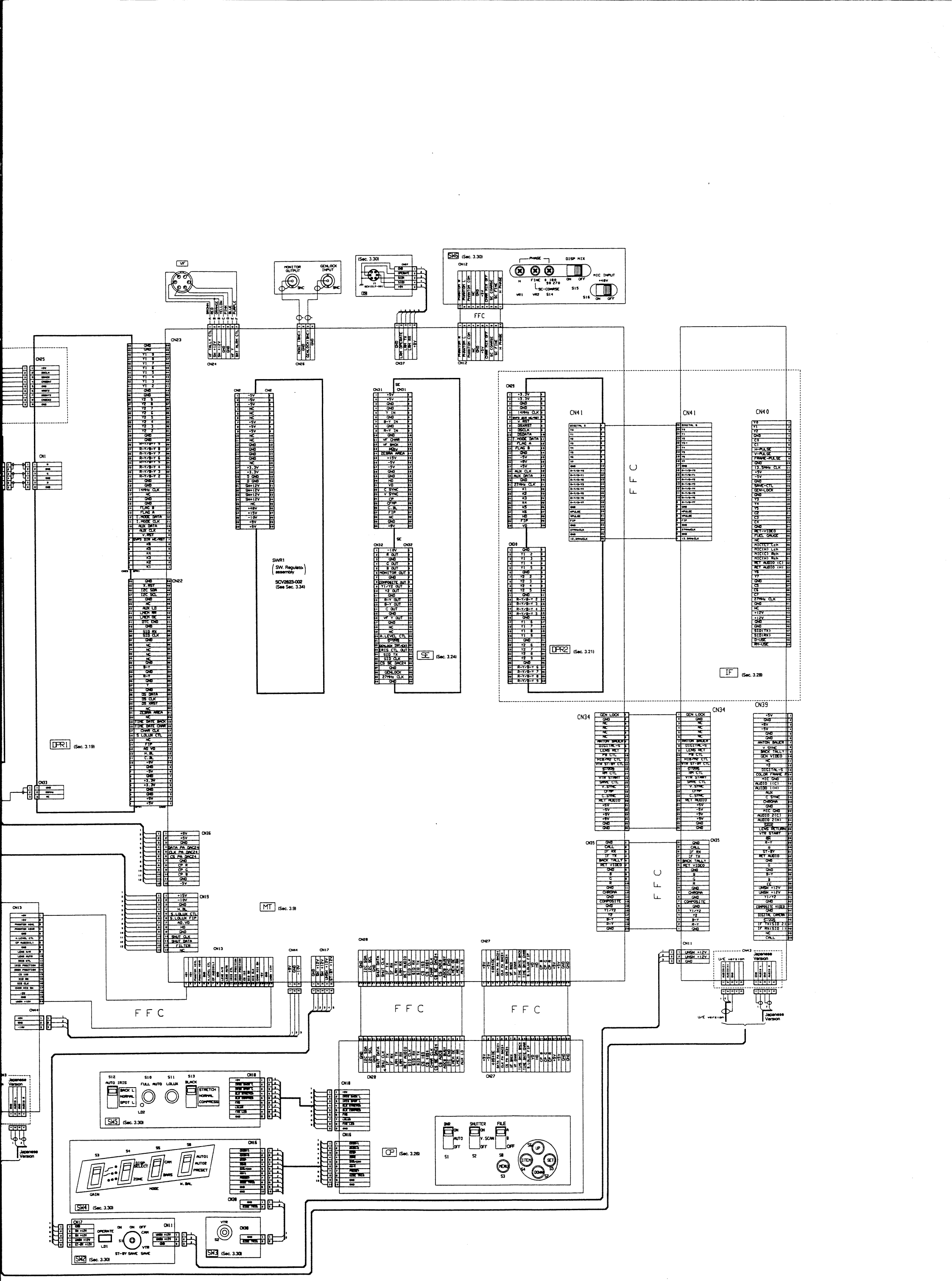
3.7 CP BOARD BLOCK DIAGRAM



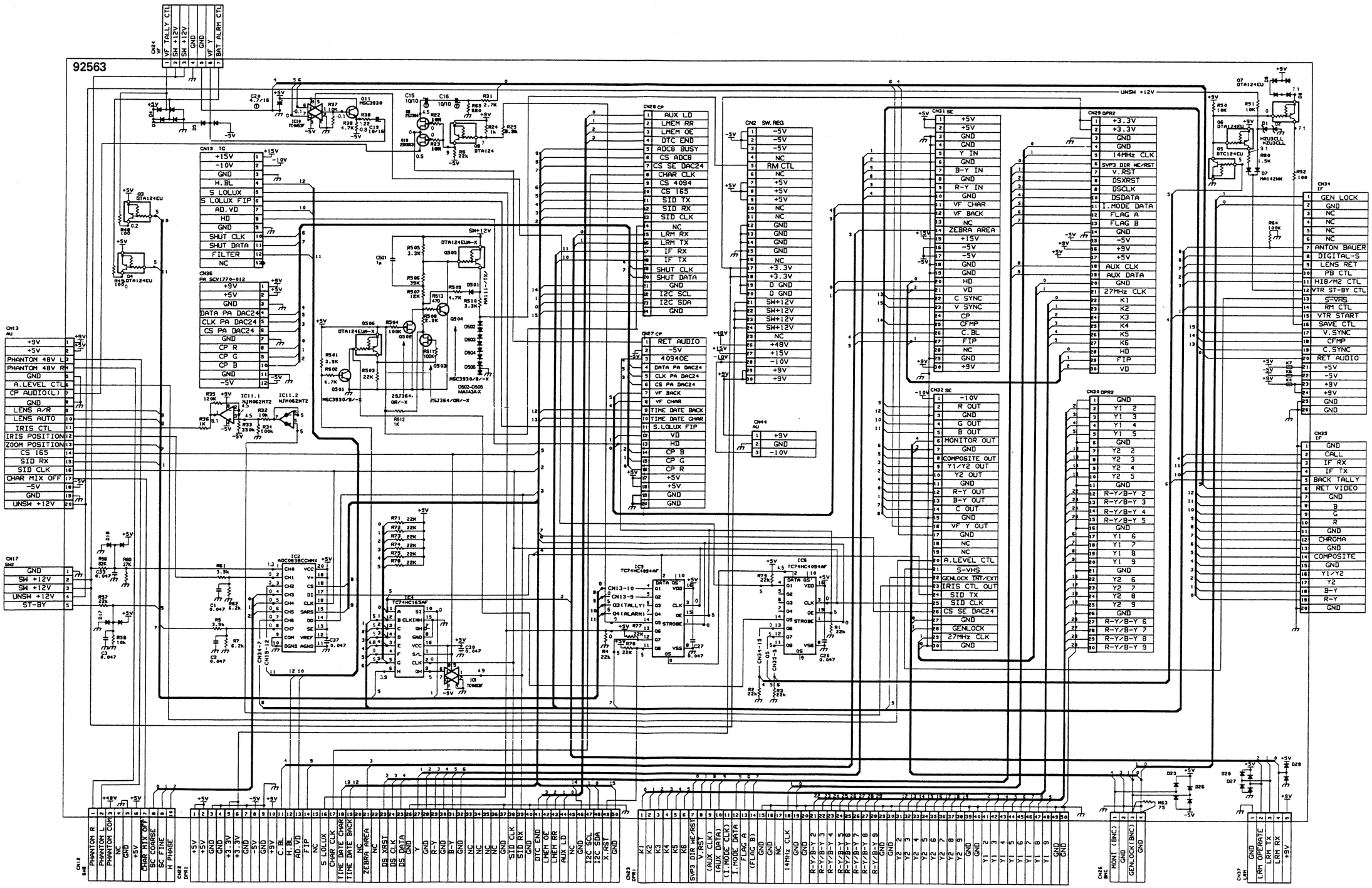
3-8

3.8 OVERALL WIRING DIAGRAM



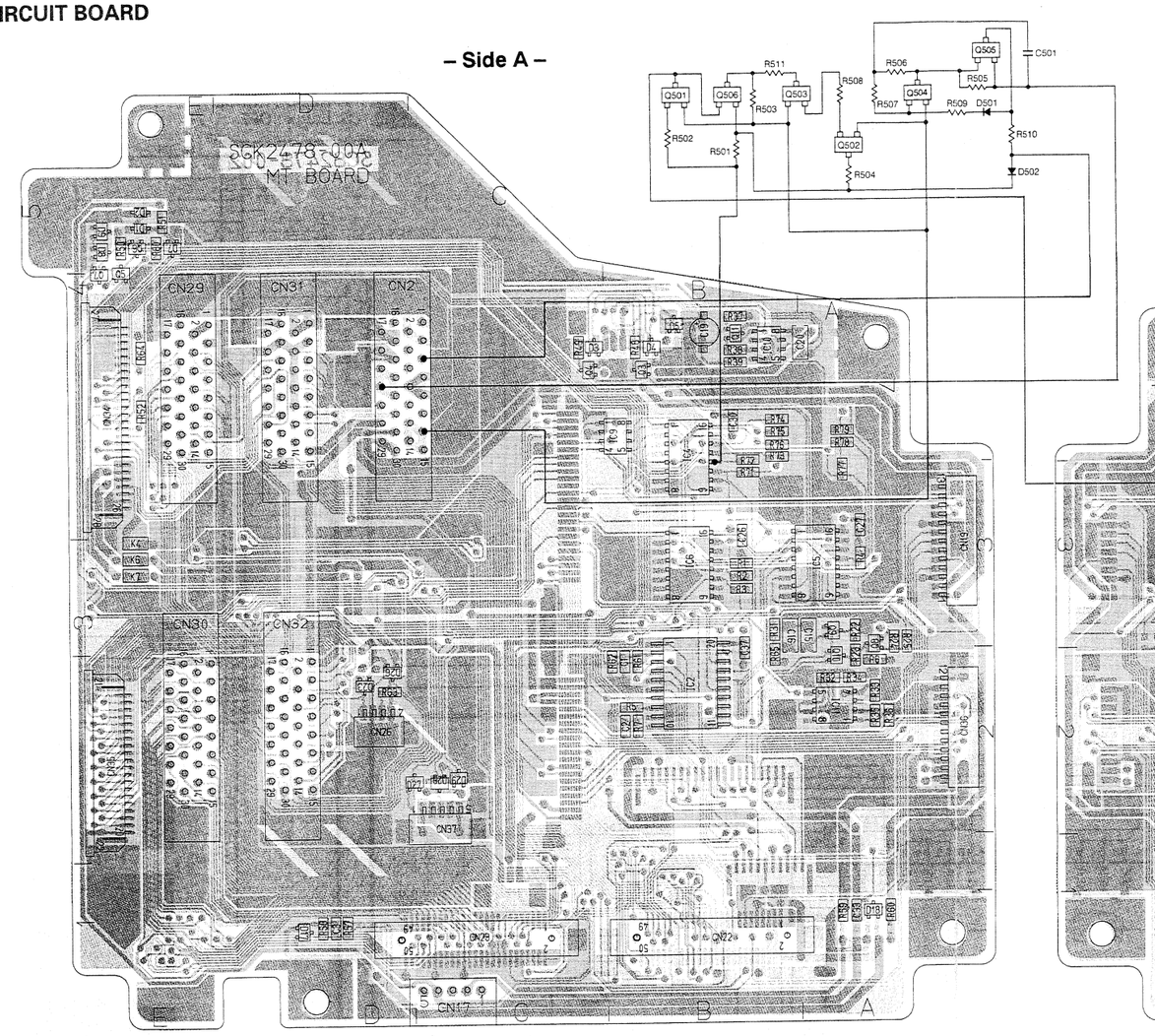

VF
MONITOR OUTPUT
GENLOCK INPUT
BNC
(Sec. 3.30)
SW6 (Sec. 3.30)
PHASE
DISP MIX
MIC INPUT
+48V
FINE
SC-COARSE
VR1
VR2
S14
S15
S16
ON
OFF
FFC
CN12
CN23
CN24
CN26
CN37
CN25
CN1
CN3
CN22
CN2
CN31
CN32
SE
SWR1
(SW. Regulator assembly)
SCV2823-002
(See Sec. 3.34)
(See Sec. 3.24)
CN29
CN30
CN41
CN40
CN39
CN34
CN35
DPR2 (See Sec. 3.21)
IF (See Sec. 3.28)
DPR1 (See Sec. 3.19)
CN36
CN19
MT (See Sec. 3.9)
CN13
CN44
CN17
CN28
CN27
CN11
CN43
W/E version
Japanese Version
CN18
CN16
CN38
SW5 (See Sec. 3.30)
SW4 (See Sec. 3.30)
SW2 (See Sec. 3.30)
SW3 (See Sec. 3.30)
OP (See Sec. 3.26)
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
LD1
LD2

3.9 MT BOARD SCHEMATIC DIAGRAM 01

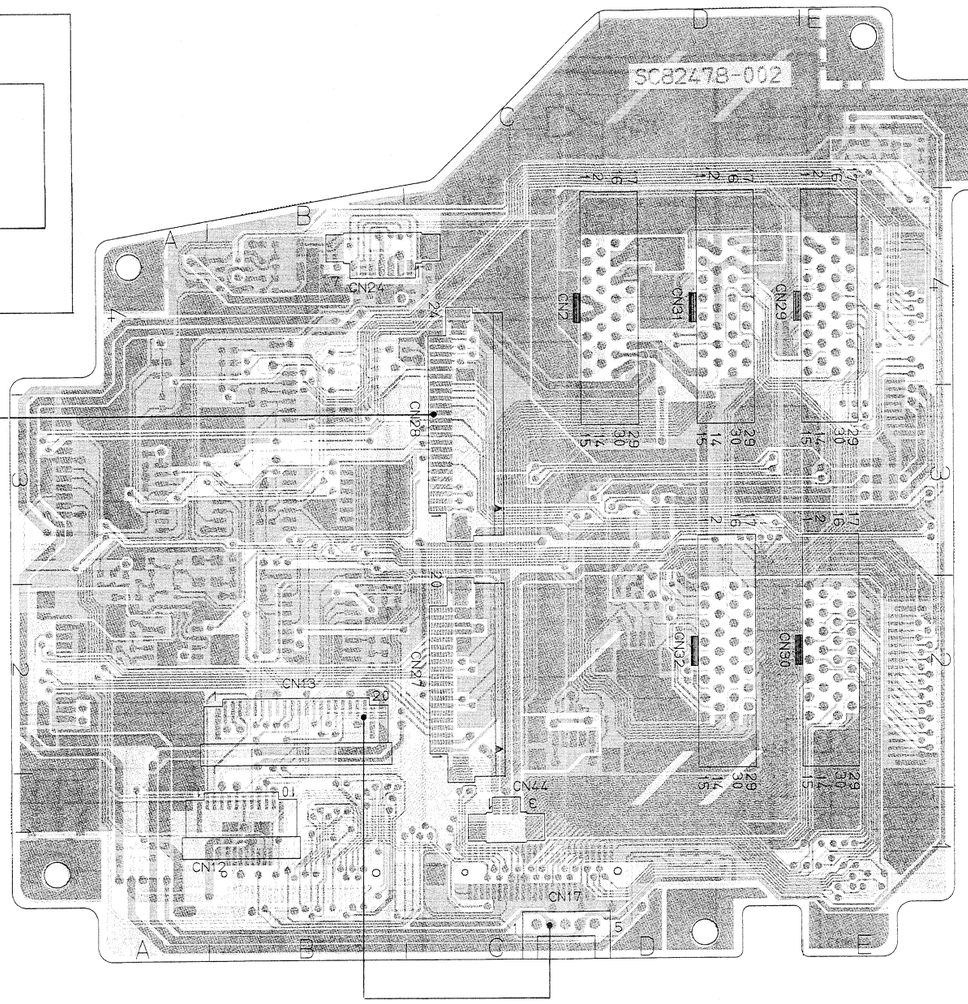


3.10 MT CIRCUIT BOARD

– Side A –



– Side B –



●ADDRESS TABLE OF BOARD PARTS

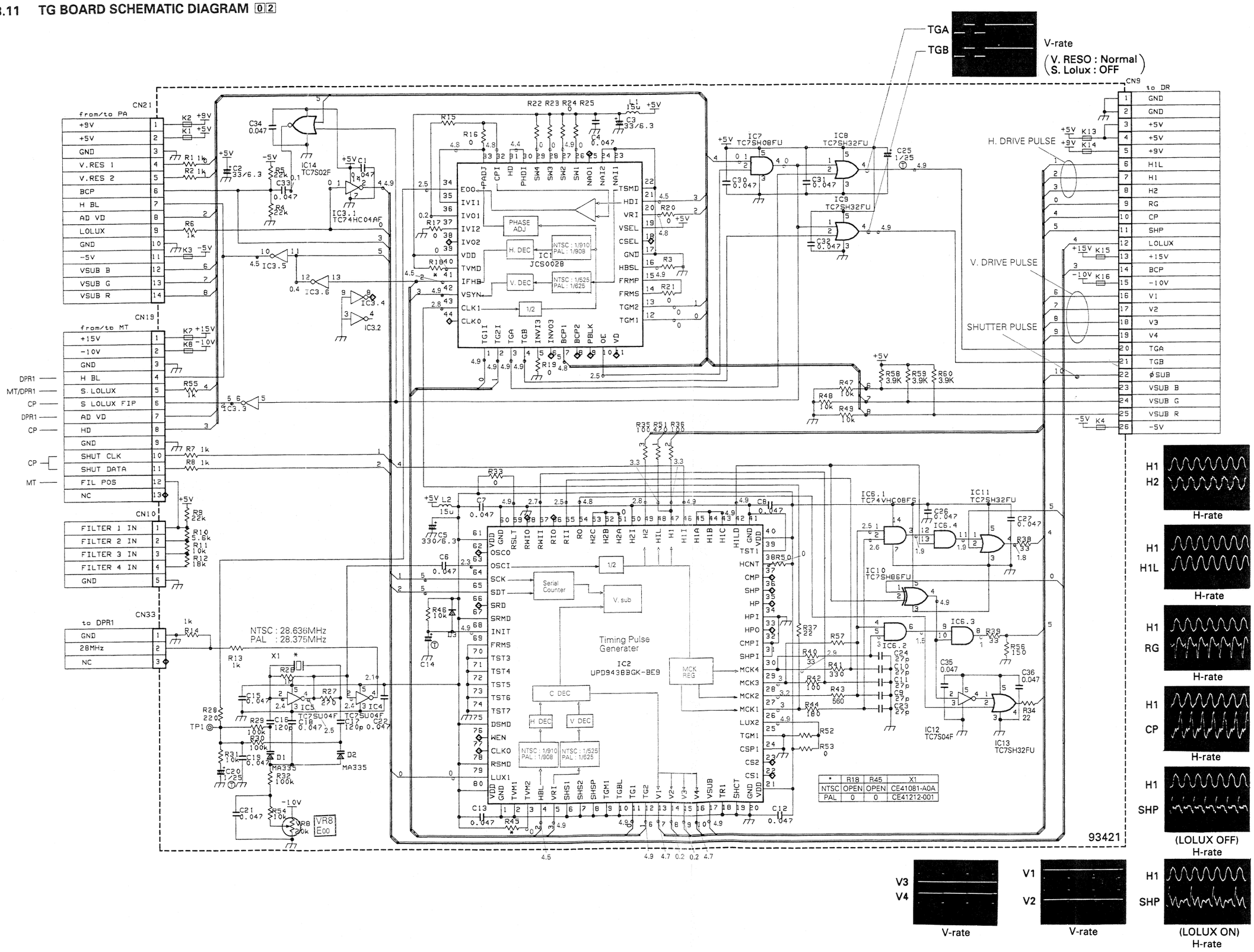
Each address may have an address error by one interval.

Side — A-1C — Y axis / X axis

IC2	A- 3B	D8	A- 5E	R34	A- 2A	R75	A- 4B	CN19	A- 3A
IC4	A- 4B	D9	A- 5E	R35	A- 2A	R76	A- 4B	CN22	A- 1B
IC5	A- 3A	D17	A- 1D	R36	A- 2A	R77	A- 3A	CN23	A- 1C
IC6	A- 3B	D18	A- 1A	R37	A- 4B	R78	A- 4A	CN24	B- 4B
IC9	A- 4B	D23	A- 2D	R38	A- 4B	R79	A- 4A	CN26	A- 2D
IC10	A- 4B	D26	A- 2D	R39	A- 4B	R80	A- 5E	CN27	B- 2C
IC11	A- 2A	D27	A- 2C	R48	A- 4B			CN28	B- 3C
		D28	A- 2C	R49	A- 4C	C1	A- 2B	CN29	A- 4E
Q3	A- 4B	D29	A- 2C	R50	A- 5E	C2	A- 2B	CN30	A- 2E
Q4	A- 4B			R51	A- 5E	C3	A- 1D	CN31	A- 4D
Q5	A- 5E	R1	A- 3B	R52	A- 4E	C15	A- 3A	CN32	A- 2D
Q6	A- 5E	R2	A- 3B	R57	A- 1D	C16	A- 3A	CN34	A- 4E
Q7	A- 5E	R3	A- 3B	R58	A- 1D	C19	A- 4B	CN35	A- 2E
Q8	A- 3A	R4	A- 3A	R59	A- 1A	C20	A- 4A	CN36	A- 2A
Q9	A- 3A	R5	A- 2B	R60	A- 1A	C26	A- 3B	CN37	A- 2C
Q10	A- 2A	R6	A- 2A	R61	A- 2B	C27	A- 3A	CN44	B- 1C
Q11	A- 4B	R7	A- 2B	R62	A- 2B	C30	A- 4B		
		R22	A- 3A	R63	A- 2D	C33	A- 1A	K4	A- 3E
D1	A- 5E	R23	A- 2A	R64	A- 4E	C37	A- 3B	K6	A- 3E
D2	A- 5E	R24	A- 3A	R65	A- 2B			K7	A- 3E
D3	A- 4B	R25	A- 3A	R71	A- 3B	CN2	A- 4C		
D4	A- 4B	R31	A- 3B	R72	A- 4B	CN12	B- 1B		
D5	A- 4B	R32	A- 2A	R73	A- 4B	CN13	B- 2B		
D7	A- 5E	R33	A- 2A	R74	A- 4B	CN17	A- 1C		

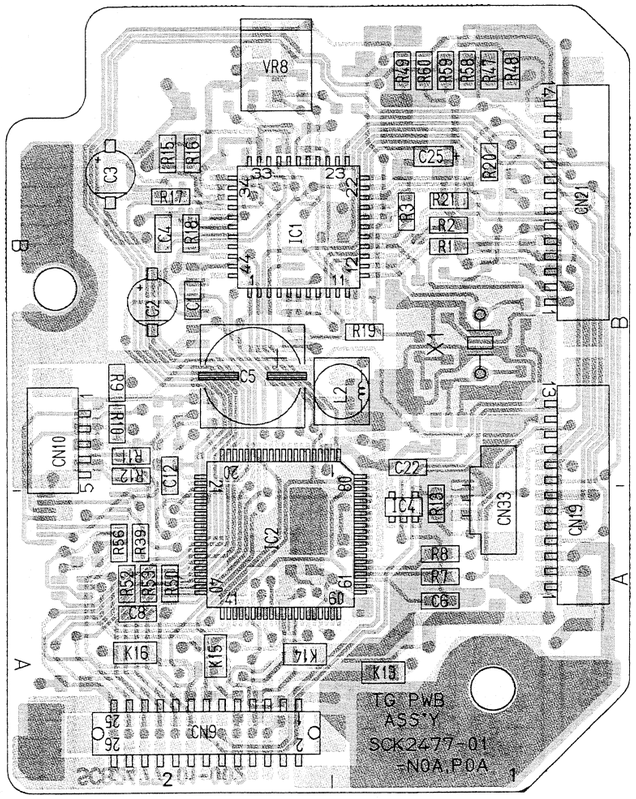
3-11

3.11 TG BOARD SCHEMATIC DIAGRAM 02

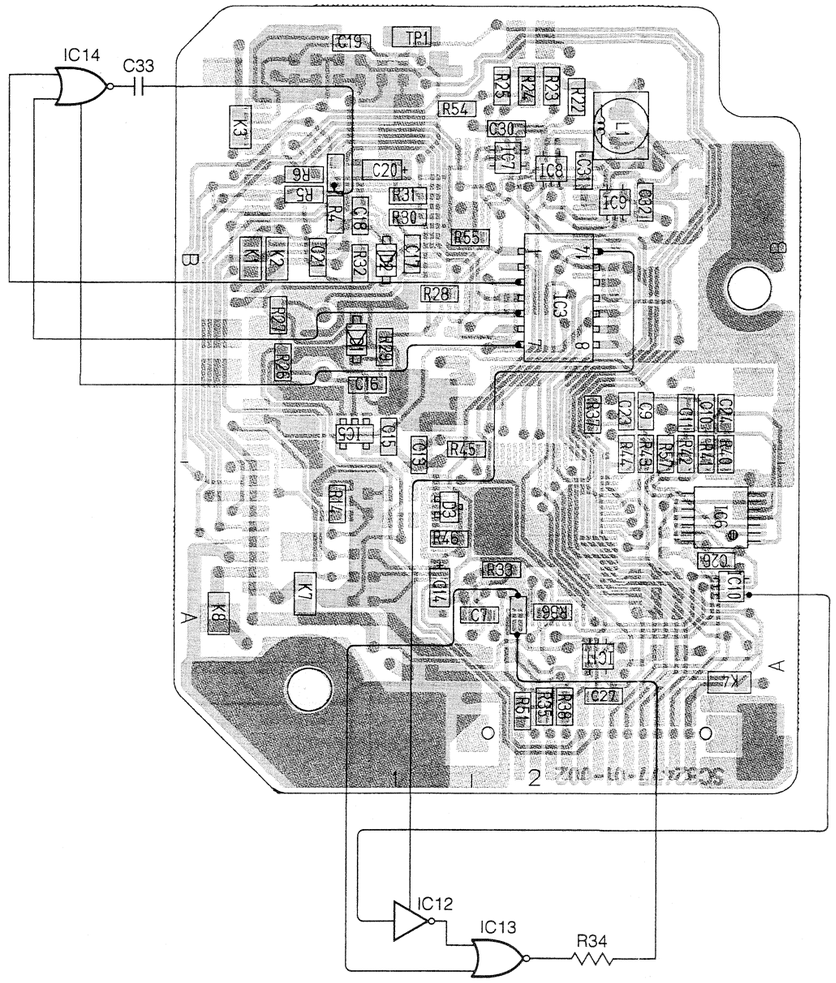


3.12 TG CIRCUIT BOARD

– Side A –



– Side B –



●ADDRESS TABLE OF BOARD PARTS

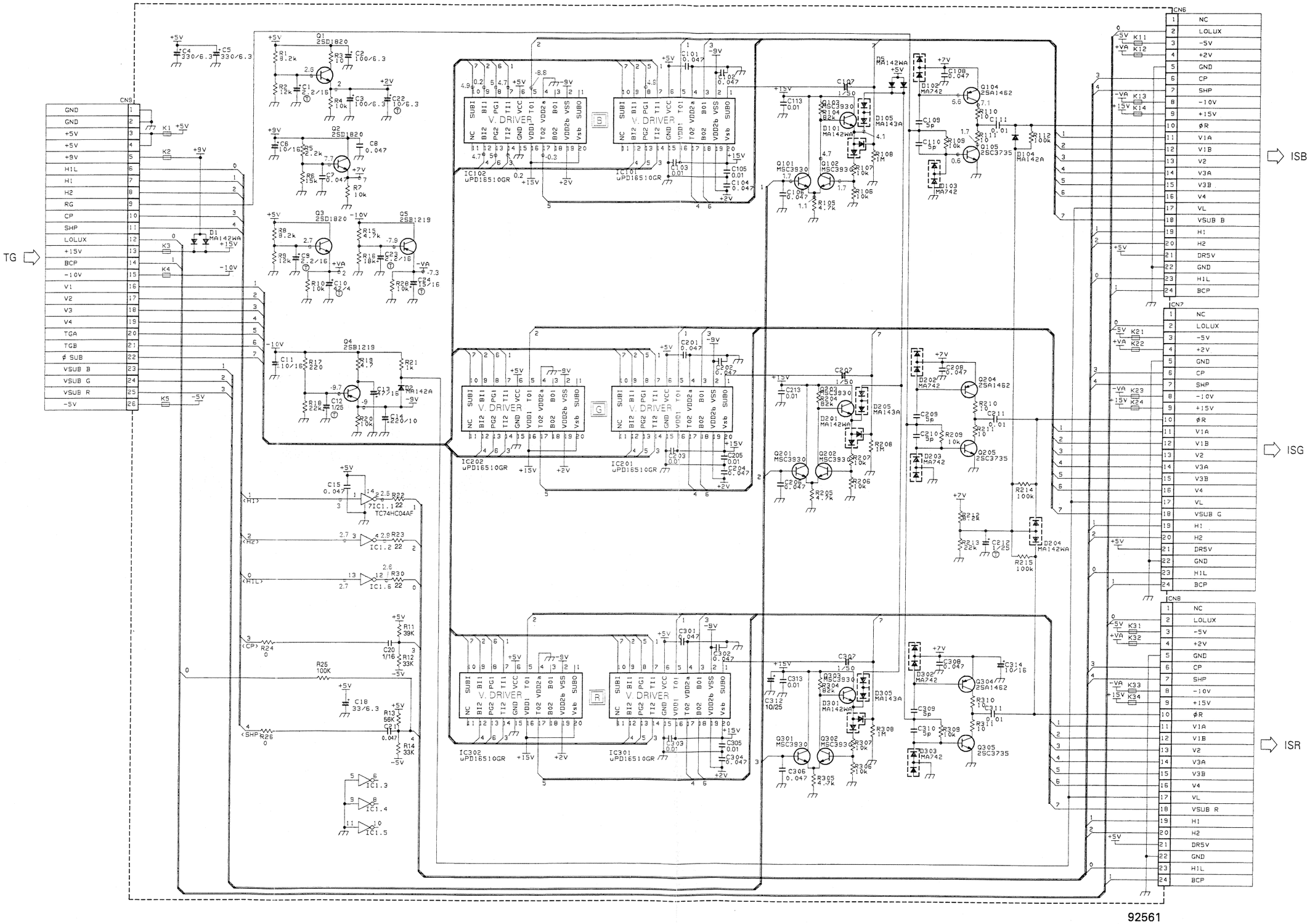
Each address may have an address error by one interval.

A-1C
Side — Y axis
X axis

IC1	A- 2B	R17	A- 2B	R49	A- 1B	C18	B- 1B	CN10	A- 2A
IC2	A- 2A	R18	A- 2B	R50	A- 2A	C19	B- 1B	CN19	A- 1A
IC3	B- 2B	R19	A- 1B	R51	B- 2A	C20	B- 1B	CN21	A- 1B
IC4	A- 1A	R20	A- 1B	R52	A- 2A	C21	B- 1B	CN33	A- 1A
IC5	B- 1A	R21	A- 1B	R53	A- 2A	C22	A- 1A		
IC6	B- 2A	R22	B- 2B	R54	B- 1B	C23	B- 2A	X1	A- 1B
IC7	B- 2B	R23	B- 2B	R55	B- 1B	C24	B- 2A		
IC8	B- 2B	R24	B- 2B	R56	A- 2A	C25	A- 1B		
IC9	B- 2B	R25	B- 2B	R57	B- 2A	C26	B- 2A		
IC10	B- 2A	R26	B- 1B	R58	A- 1B	C27	B- 2A		
IC11	B- 2A	R27	B- 1B	R59	A- 1B	C30	B- 2B		
		R28	B- 1B	R60	A- 1B	C31	B- 2B		
D1	B- 1B	R29	B- 1B			C32	B- 2B		
D2	B- 1B	R30	B- 1B	VR8	A- 2B	C33	B- 1B		
D3	B- 1A	R31	B- 1B						
		R32	B- 1B	C1	A- 2B	L1	B- 2B		
R1	A- 1B	R33	B- 2A	C2	A- 2B	L2	A- 1B		
R2	A- 1B	R34	B- 2A	C3	A- 2B				
R3	A- 1B	R35	B- 2A	C4	A- 2B	TP1	B- 1B		
R4	B- 1B	R36	B- 2A	C5	A- 2B				
R5	B- 1B	R37	B- 2A	C6	A- 1A	K1	B- 1B		
R6	B- 1B	R38	B- 2A	C7	B- 1A	K2	B- 1B		
R7	A- 1A	R39	A- 2A	C8	A- 2A	K3	B- 1B		
R8	A- 1A	R40	B- 2A	C9	B- 2A	K4	B- 2A		
R9	A- 2B	R41	B- 2A	C10	B- 2A	K7	B- 1A		
R10	A- 2A	R42	B- 2A	C11	B- 2A	K8	B- 1A		
R11	A- 2A	R43	B- 2A	C12	A- 2A	K13	A- 1A		
R12	A- 2A	R44	B- 2A	C13	B- 1A	K14	A- 2A		
R13	A- 1A	R45	B- 1A	C14	B- 1A	K15	A- 2A		
R14	B- 1A	R46	B- 1A	C15	B- 1A	K16	A- 2A		
R15	A- 2B	R47	A- 1B	C16	B- 1B				
R16	A- 2B	R48	A- 1B	C17	B- 1B	CN9	A- 2A		

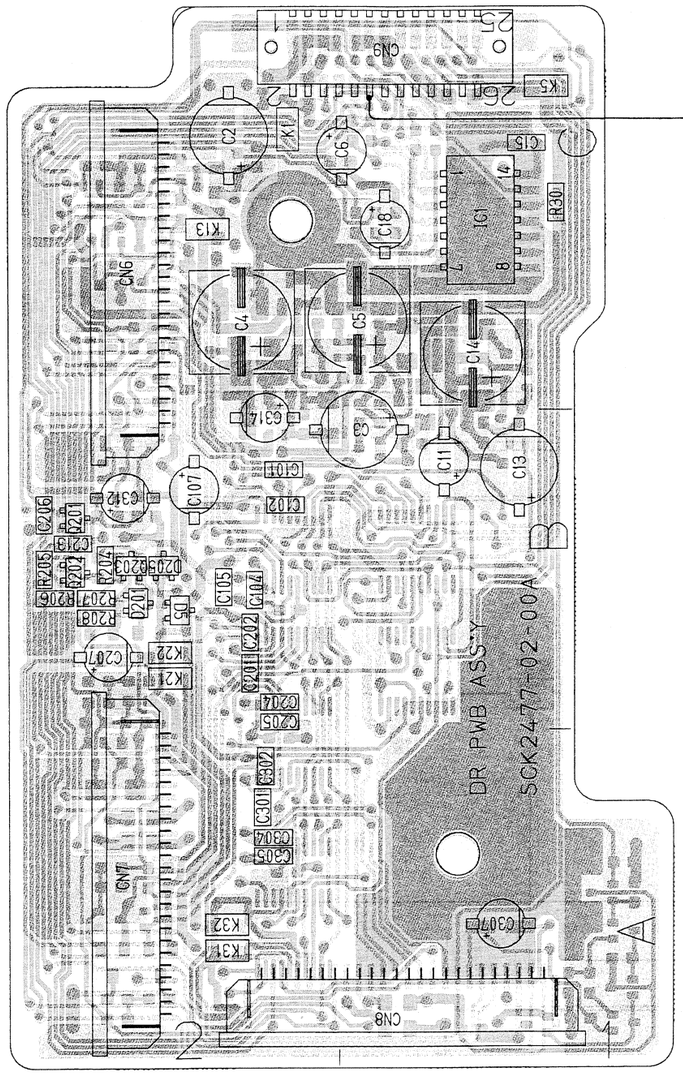
3-13

3.13 DR BOARD SCHEMATIC DIAGRAM 03



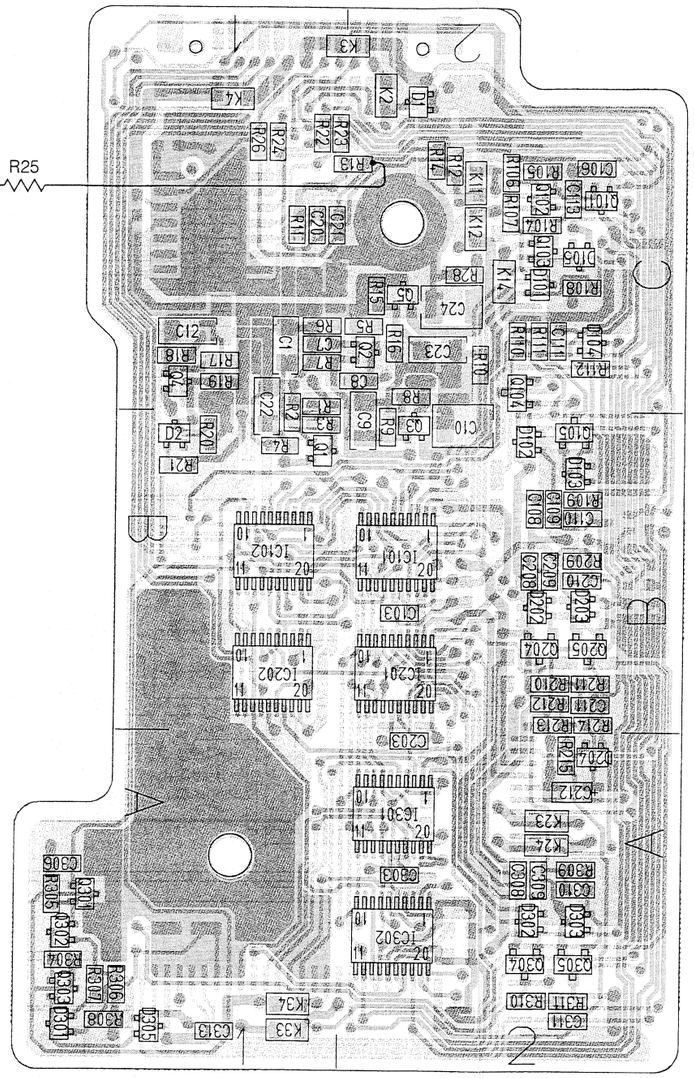
3.14 DR CIRCUIT BOARD

– Side A –



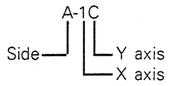
R25

– Side B –



●ADDRESS TABLE OF BOARD PARTS

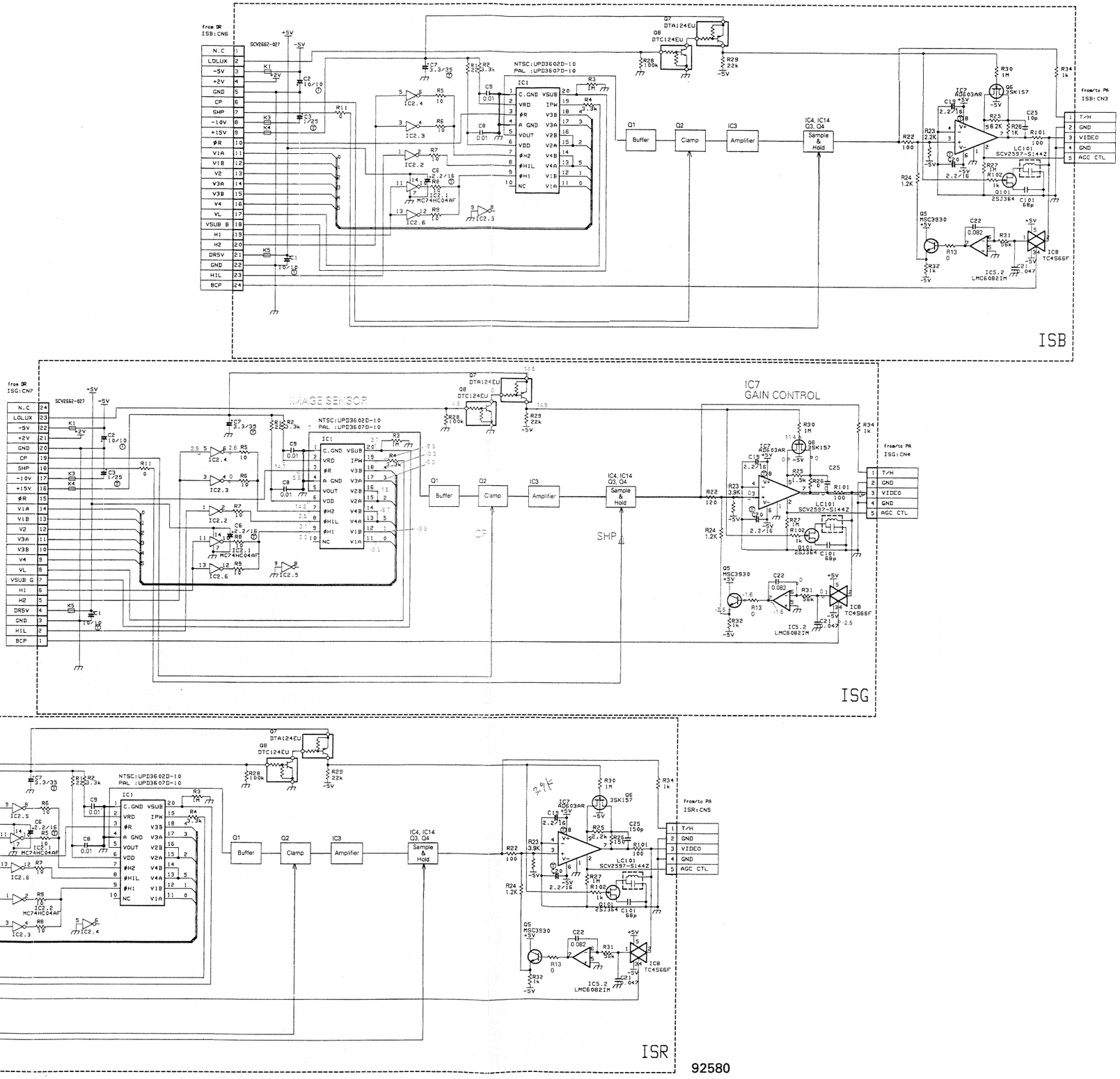
Each address may have an address error by one interval.



IC1	A- 1C	Q302	B- 1A	R2	B- 1B	R28	B- 2C	R305	B- 1A	C20	B- 1C	C208	B- 2B	CN9	A- 1C
IC101	B- 2B	Q303	B- 1A	R3	B- 1B	R30	A- 1C	R306	B- 1A	C21	B- 1C	C209	B- 2B		
IC102	B- 1B	Q304	B- 2A	R4	B- 1B	R104	B- 2C	R307	B- 1A	C22	B- 1B	C210	B- 2B	K1	A- 2C
IC201	B- 2B	Q305	B- 2A	R5	B- 2C	R105	B- 2C	R308	B- 1A	C23	B- 2C	C211	B- 2B	K2	B- 2C
IC202	B- 1B			R6	B- 1C	R106	B- 2C	R309	B- 2A	C24	B- 2C	C212	B- 2A	K3	B- 1C
IC301	B- 2A	D1	B- 2C	R7	B- 1C	R107	B- 2C	R310	B- 2A	C101	A- 2B	C213	A- 2B	K4	B- 1C
IC302	B- 2A	D2	B- 1B	R8	B- 2B	R108	B- 2C	R311	B- 2A	C102	A- 2B	C301	A- 2A	K5	A- 1C
		D5	A- 2B	R9	B- 2B	R109	B- 2B			C103	B- 2B	C302	A- 2A	K11	B- 2C
Q1	B- 1B	D101	B- 2C	R10	B- 2B	R110	B- 2C	C1	B- 1C	C104	A- 2B	C303	B- 2A	K12	B- 2C
Q2	B- 2C	D102	B- 2B	R11	B- 1C	R111	B- 2C	C2	A- 2C	C105	A- 2B	C304	A- 2A	K13	A- 2C
Q3	B- 2B	D103	B- 2B	R12	B- 2C	R112	B- 2B	C3	A- 1B	C106	B- 2C	C305	A- 2A	K14	B- 2C
Q4	B- 1B	D104	B- 2C	R13	B- 2C	R204	A- 2B	C4	A- 2C	C107	A- 2B	C306	B- 1A	K21	A- 2B
Q5	B- 2C	D105	B- 2C	R14	B- 2C	R205	A- 2B	C5	A- 1C	C108	B- 2B	C307	A- 1A	K22	A- 2B
Q101	B- 2C	D201	A- 2B	R15	B- 2C	R206	A- 2B	C6	A- 1C	C109	B- 2B	C308	B- 2A	K23	B- 2A
Q102	B- 2C	D202	B- 2B	R16	B- 2C	R207	A- 2B	C7	B- 1C	C110	B- 2B	C309	B- 2A	K24	B- 2A
Q103	B- 2C	D203	B- 2B	R17	B- 1C	R208	A- 2B	C8	B- 2B	C111	B- 2C	C310	B- 2A	K31	A- 2A
Q104	B- 2B	D204	B- 2A	R18	B- 1C	R209	B- 2B	C9	B- 2B	C113	B- 2C	C311	B- 2A	K32	A- 2A
Q105	B- 2B	D205	A- 2B	R19	B- 1B	R210	B- 2B	C10	B- 2B	C201	A- 2B	C312	A- 2B	K33	B- 1A
Q201	A- 2B	D301	B- 1A	R20	B- 1B	R211	B- 2B	C11	A- 1B	C202	A- 2B	C313	B- 1A	K34	B- 1A
Q202	A- 2B	D302	B- 2A	R21	B- 1B	R212	B- 2B	C12	B- 1C	C203	B- 2A	C314	A- 2B		
Q203	A- 2B	D303	B- 2A	R22	B- 1C	R213	B- 2A	C13	A- 1B	C204	A- 2B				
Q204	B- 2B	D305	B- 1A	R23	B- 1C	R214	B- 2A	C14	A- 1C	C205	A- 2A	CN6	A- 2C		
Q205	B- 2B			R24	B- 1C	R215	B- 2A	C15	A- 1C	C206	A- 2B	CN7	A- 2A		
Q301	B- 1A	R1	B- 1B	R26	B- 1C	R304	B- 1A	C18	A- 1C	C207	A- 2B	CN8	A- 1A		

3-15

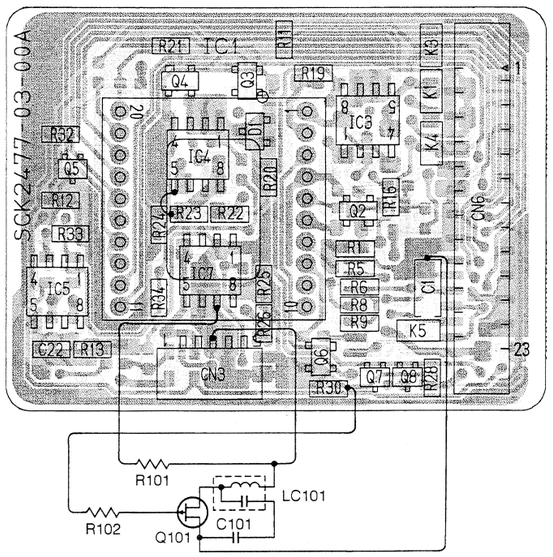
3.15 ISB/ISG/ISR BOARD SCHEMATIC DIAGRAMS 04/05/06



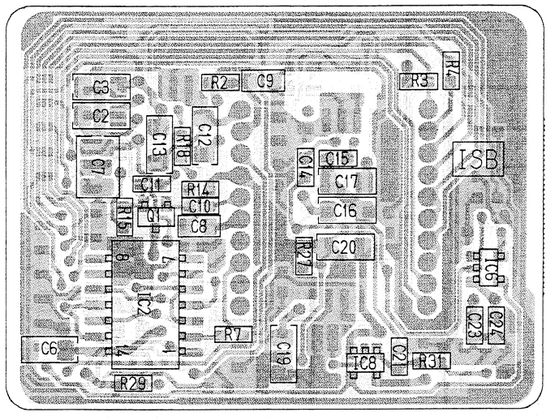
3.16 ISB/ISG/ISR CIRCUIT BOARDS

• **ISB board**

– Side A –

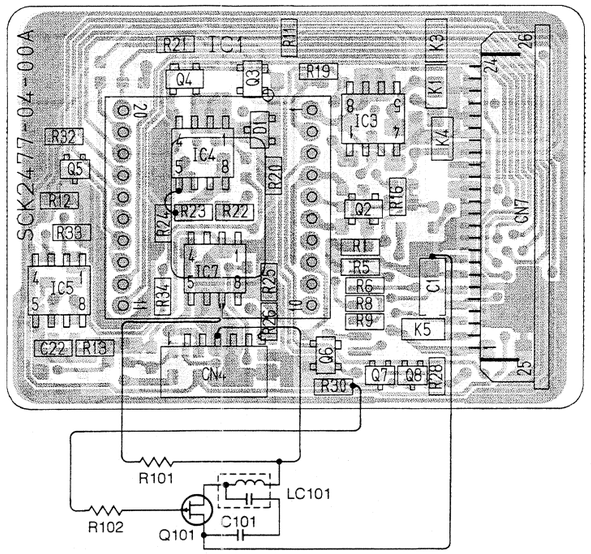


– Side B –

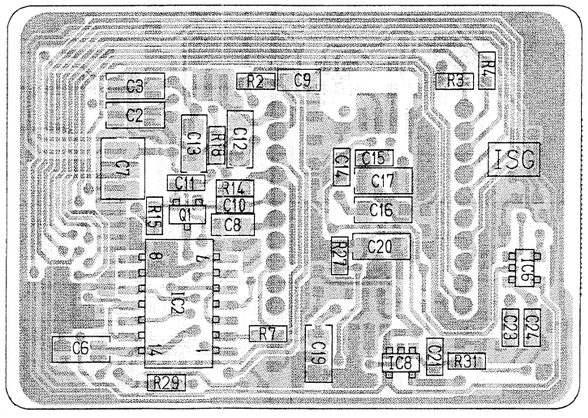


• **ISG board**

– Side A –

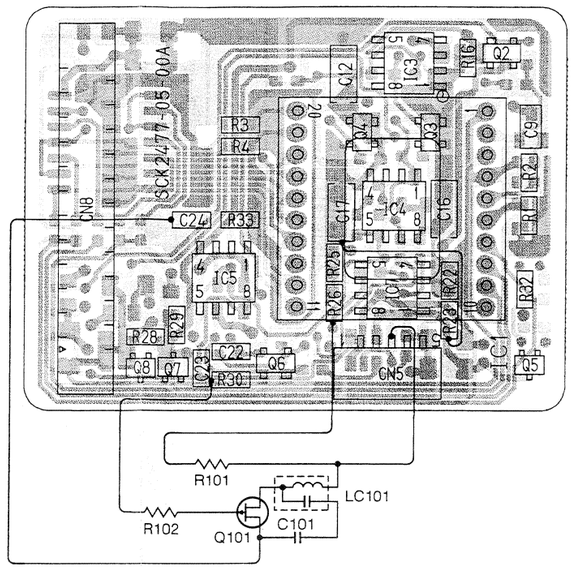


– Side B –

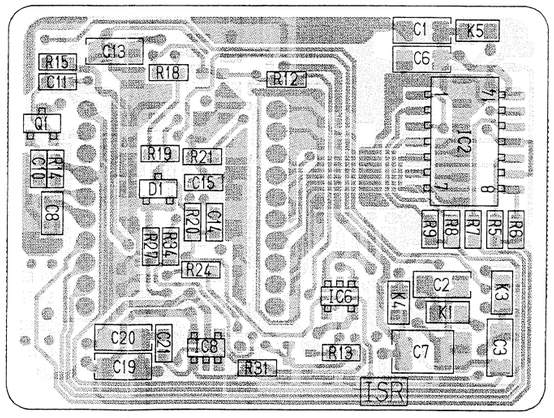


• **ISR board**

– Side A –

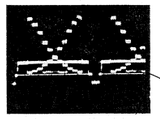


– Side B –

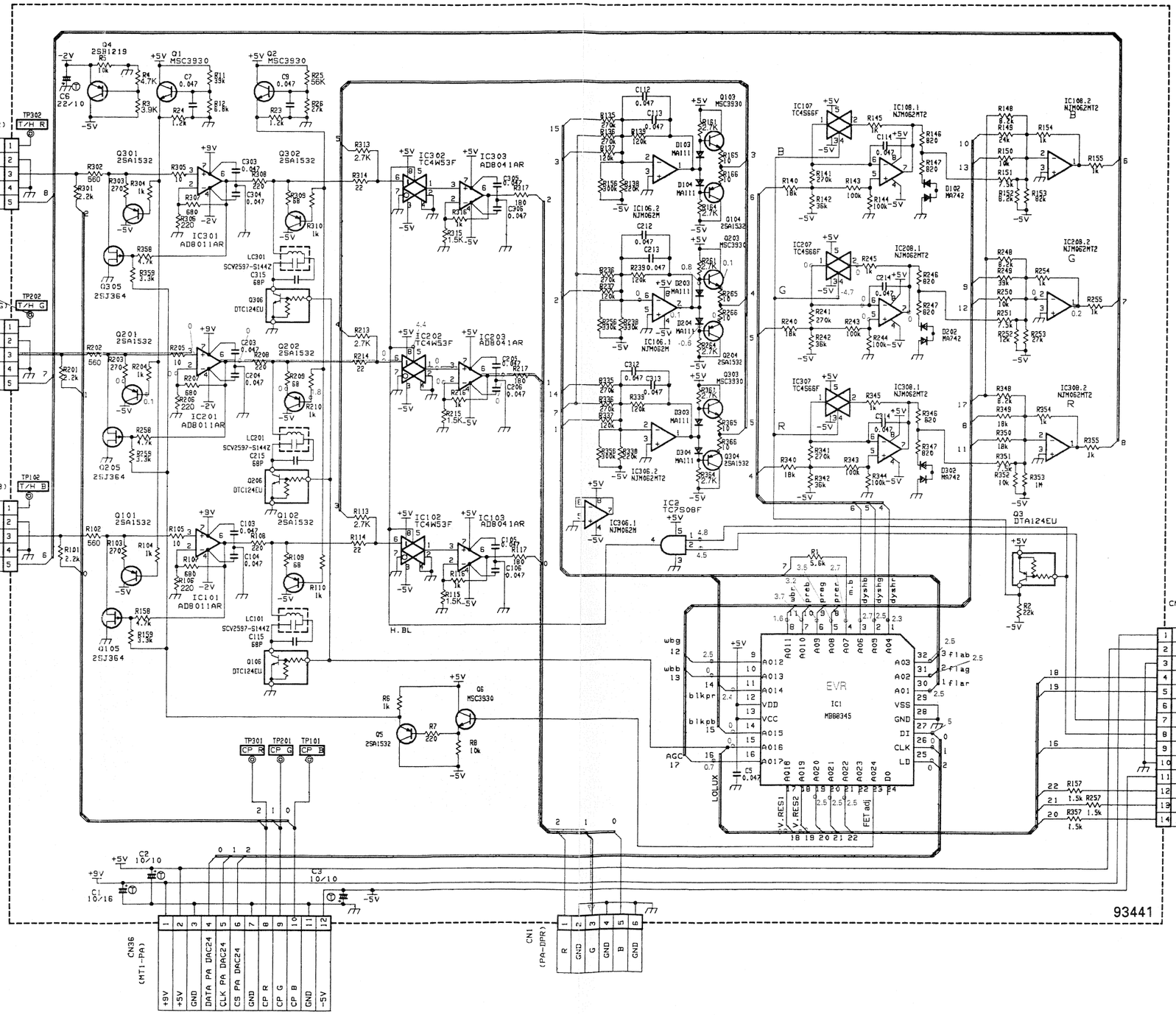


3-17

3.17 PA BOARD SCHEMATIC DIAGRAM 07



H-rate, 0.7Vp-p

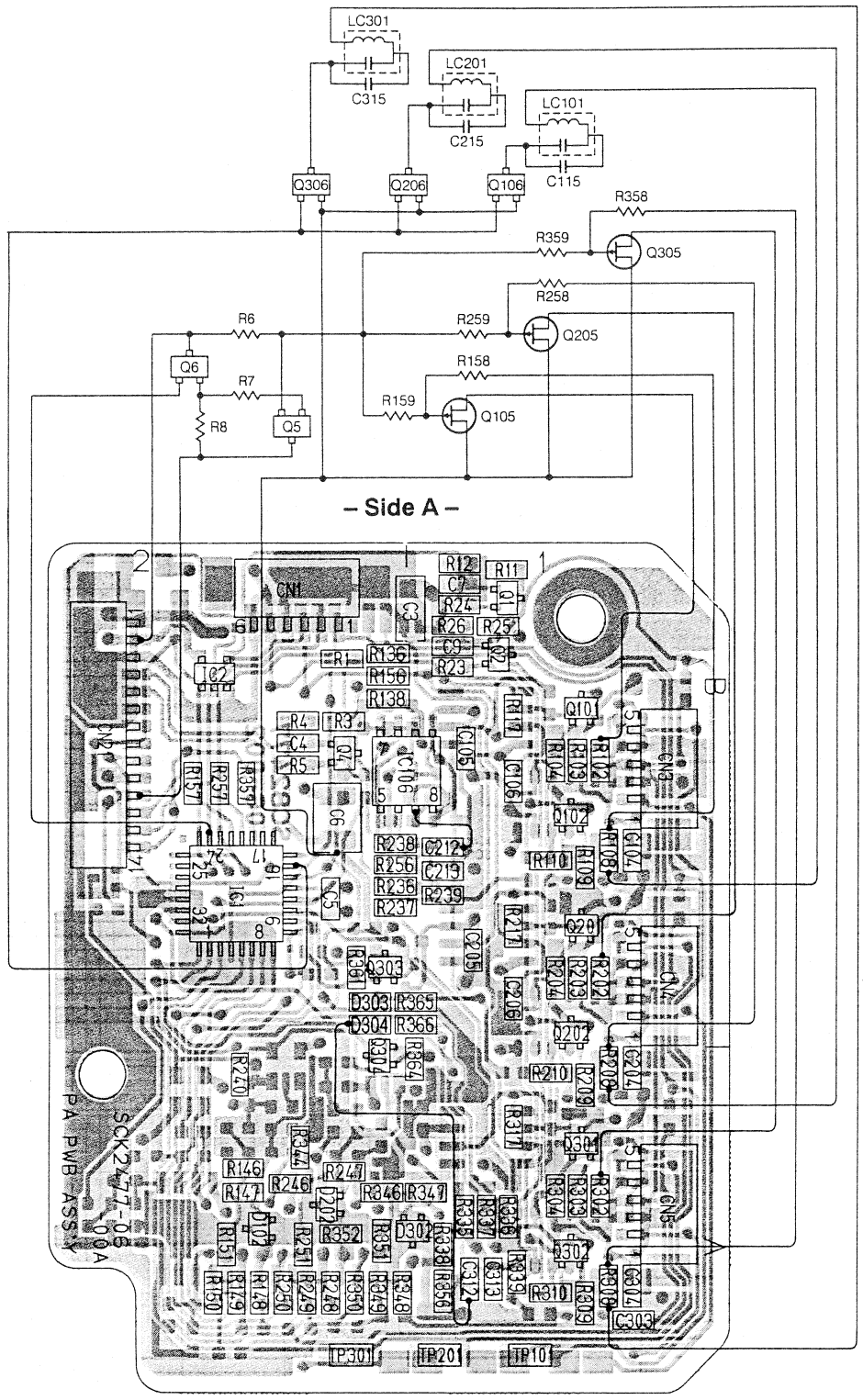


IC1
Pin Assignment

Pin No.	Name
1	Dynamic shading R
2	Dynamic shading G
3	Dynamic shading B
4	Master black
5	Preset R
6	Preset G
7	Preset B
8	White balance R
9	White balance G
10	White balance B
11	Black paint R
12	VDD
13	VCC
14	Black paint B
15	LOLUX
16	AGC (GAIN Boost)
17	V. RESO1
18	V. RESO2
19	VSUB R
20	VSUB G
21	VSUB B
22	NC
23	FET adjust
24	NC
25	LD
26	CLK
27	DI
28	GND
29	VSS
30	Flare R
31	Flare G
32	Flare B

3-18

3.18 PA CIRCUIT BOARD



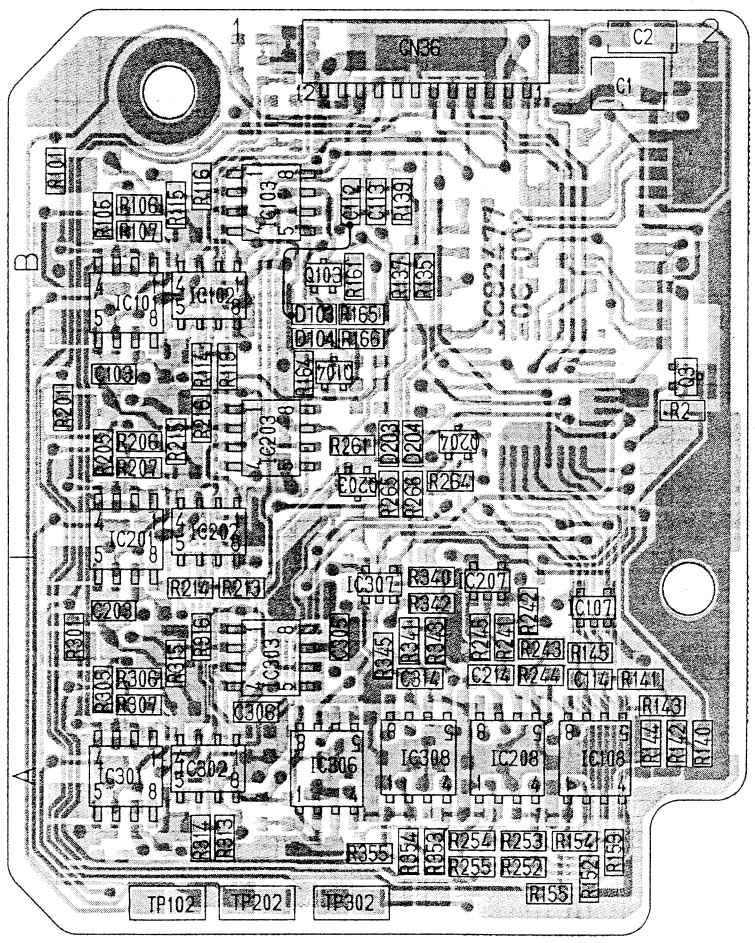
●ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

Side A-1C — Y axis / X axis

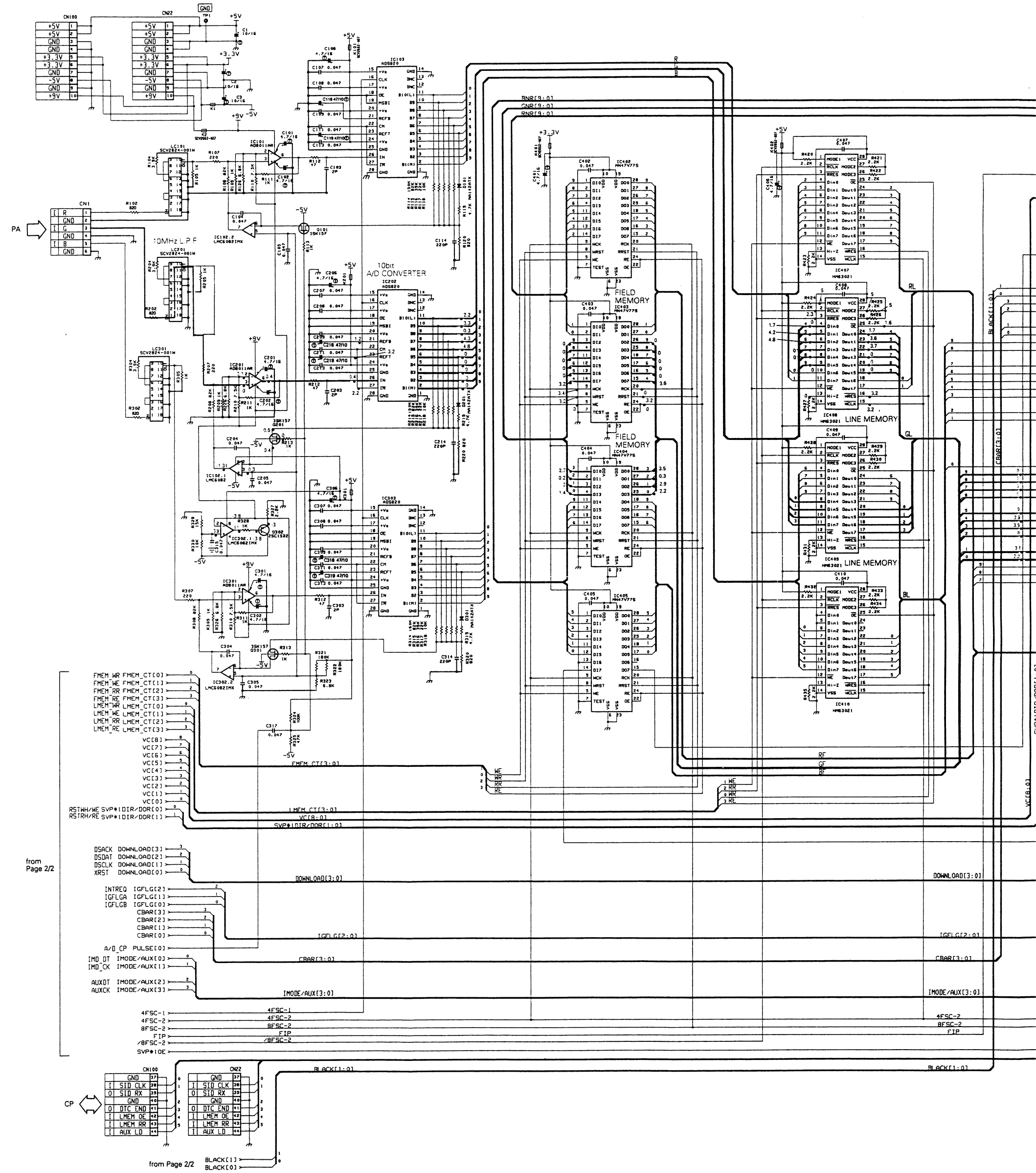
IC1	A- 2B	D102	A- 2A	R141	B- 2A	R216	B- 1B	R307	B- 1A	R365	A- 1A	TP202	B- 1A
IC2	A- 2B	D202	A- 2A	R142	B- 2A	R217	A- 1B	R308	A- 1A	R366	A- 1A	TP301	A- 2A
IC101	B- 1B	D302	A- 1A	R143	B- 2A	R236	A- 2B	R309	A- 1A			TP302	B- 1A
IC102	B- 1B			R144	B- 2A	R237	A- 2B	R310	A- 1A	C1	B- 2B		
IC103	B- 1B	R1	A- 2B	R145	B- 2A	R238	A- 2B	R313	B- 1A	C2	B- 2B	CN1	A- 2B
IC106	A- 1B	R2	B- 2B	R146	A- 2A	R239	A- 1B	R314	B- 1A	C3	A- 1B	CN3	A- 1B
IC107	B- 2A	R3	A- 2B	R147	A- 2A	R240	A- 2A	R315	B- 1A	C4	A- 2B	CN4	A- 1B
IC108	B- 2A	R4	A- 2B	R148	A- 2A	R241	B- 2A	R316	B- 1A	C5	A- 2B	CN5	A- 1A
IC201	B- 1A	R5	A- 2B	R149	A- 2A	R242	B- 2A	R317	A- 1A	C6	A- 2B	CN21	A- 2B
IC202	B- 1A	R11	A- 1B	R150	A- 2A	R243	B- 2A	R335	A- 1A	C7	A- 1B	CN36	B- 2B
IC203	B- 1B	R12	A- 1B	R151	A- 2A	R244	B- 2A	R336	A- 1A	C9	A- 1B		
IC207	B- 2A	R23	A- 1B	R152	B- 2A	R245	B- 2A	R337	A- 1A	C103	B- 1B		
IC208	B- 2A	R24	A- 1B	R153	B- 2A	R246	A- 2A	R338	A- 1A	C104	A- 1B		
IC301	B- 1A	R25	A- 1B	R154	B- 2A	R247	A- 2A	R339	A- 1A	C105	A- 1B		
IC302	B- 1A	R26	A- 1B	R155	B- 2A	R248	A- 2A	R340	B- 2A	C106	A- 1B		
IC303	B- 1A	R101	B- 1B	R156	A- 2B	R249	A- 2A	R341	B- 2A	C112	B- 1B		
IC306	B- 1A	R102	A- 1B	R157	A- 2B	R250	A- 2A	R342	B- 2A	C113	B- 2B		
IC307	B- 2A	R103	A- 1B	R161	B- 1B	R251	A- 2A	R343	B- 2A	C114	B- 2A		
IC308	B- 2A	R104	A- 1B	R162	B- 1B	R252	B- 2A	R344	A- 2A	C203	B- 1A		
		R105	B- 1B	R163	B- 1B	R253	B- 2A	R345	B- 2A	C204	A- 1A		
Q1	A- 1B	R106	B- 1B	R164	B- 1B	R254	B- 2A	R346	A- 2A	C205	A- 1B		
Q2	A- 1B	R107	B- 1B	R165	B- 1B	R255	B- 2A	R347	A- 1A	C206	A- 1A		
Q3	B- 2B	R108	A- 1B	R166	B- 1B	R256	A- 2B	R348	A- 1A	C212	A- 1B		
Q4	A- 2B	R109	A- 1B	R201	B- 1B	R257	A- 2B	R349	A- 2A	C213	A- 1B		
Q101	A- 1B	R110	A- 1B	R202	A- 1B	R261	B- 1B	R350	A- 2A	C214	B- 2A		
Q102	A- 1B	R113	B- 1B	R203	A- 1B	R262	B- 2B	R351	A- 2A	C303	A- 1A		
Q103	B- 1B	R114	B- 1B	R204	A- 1B	R263	B- 2B	R352	A- 2A	C304	A- 1A		
Q104	B- 1B	R115	B- 1B	R205	B- 1B	R264	B- 2B	R353	B- 2A	C305	B- 1A		
Q201	A- 1B	R116	B- 1B	R206	B- 1B	R265	B- 2A	R354	B- 2A	C306	B- 1A		
Q202	A- 1A	R117	A- 1B	R207	B- 1B	R266	B- 2A	R355	B- 2A	C312	A- 1A		
Q203	B- 1B	R135	B- 2B	R208	A- 1A	R301	B- 1A	R356	A- 1A	C313	A- 1A		
Q204	B- 2B	R136	A- 2B	R209	A- 1A	R302	A- 1A	R357	A- 2B	C314	B- 2A		
Q301	A- 1A	R137	B- 2B	R210	A- 1A	R303	A- 1A	R361	A- 2B				
Q302	A- 1A	R138	A- 2B	R213	B- 1A	R304	A- 1A	R362	A- 2A	TP101	A- 1A		
Q303	A- 2B	R139	B- 2B	R214	B- 1A	R305	B- 1A	R363	A- 2A	TP102	B- 1A		
Q304	A- 2A	R140	B- 2A	R215	B- 1B	R306	B- 1A	R364	A- 1A	TP201	A- 1A		

– Side B –



R365	A- 1A	TP202	B- 1A
R366	A- 1A	TP301	A- 2A
		TP302	B- 1A
C1	B- 2B		
C2	B- 2B	CN1	A- 2B
C3	A- 1B	CN3	A- 1B
C4	A- 2B	CN4	A- 1B
C5	A- 2B	CN5	A- 1A
C6	A- 2B	CN21	A- 2B
C7	A- 1B	CN36	B- 2B
C9	A- 1B		
C103	B- 1B		
C104	A- 1B		
C105	A- 1B		
C106	A- 1B		
C112	B- 1B		
C113	B- 2B		
C114	B- 2A		
C203	B- 1A		
C204	A- 1A		
C205	A- 1B		
C206	A- 1A		
C212	A- 1B		
C213	A- 1B		
C214	B- 2A		
C303	A- 1A		
C304	A- 1A		
C305	B- 1A		
C306	B- 1A		
C312	A- 1A		
C313	A- 1A		
C314	B- 2A		
TP101	A- 1A		
TP102	B- 1A		
TP201	A- 1A		

3.19 DPR1 BOARD SCHEMATIC DIAGRAM(1/2) 08



IC401
JCS0039

WHITE DOTS CORRECTION

COLOR MATRIX

DIGITAL NOISE REDUCER

DETAIL CORRECTION

IC407 IC408 IC409 IC410 IC406
HM63021

LINE MEMORY

SN74LS07DB
IC602.1

SKIN TONE

BNR[9]
BNR[8]
BNR[7]
BNR[6]
BNR[5]
BNR[4]
BNR[3]
BNR[2]
BNR[1]
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GNR[9]
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GNR[7]
GNR[6]
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RNR[0]

to Page 2/2

VCR[8:0]
BLACK[1:0]
CBAR[3:0]
SVF1DIR/DOB[11:0]
DOWNLOAD[3:0]
IGFLG[2:0]
IMODE/AUX[3:0]
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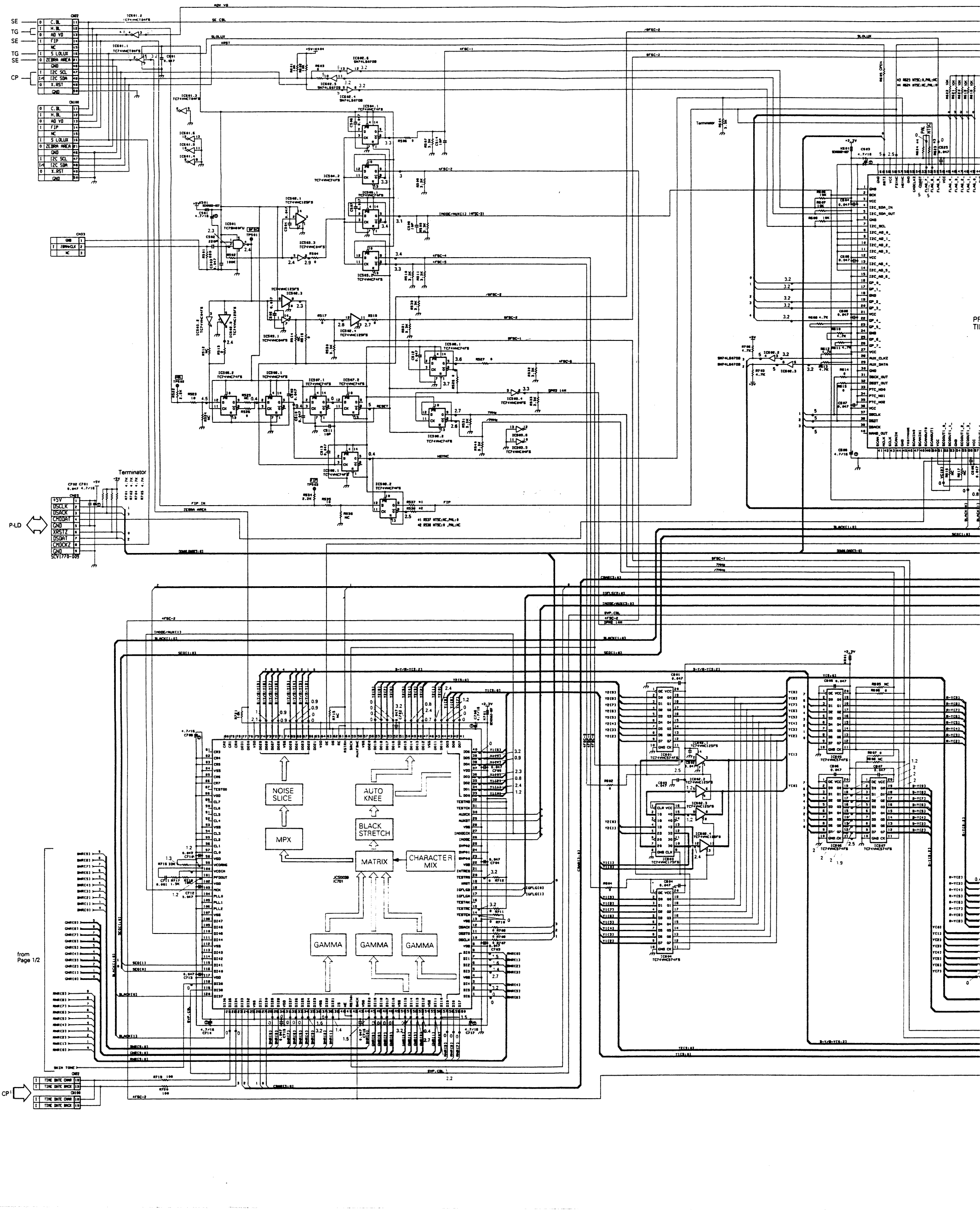
8FSC-2
FIP
RF
GF
BF
WE
RR
WR
RF

DPR1 BOARD SCHEMATIC DIAGRAM(2/2)



PROGRAMMABLE
TIMING CONTROLLER

D/A
CONVERTER

to
Page 1/2

to
Page 1/2

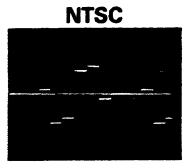
DPR2

NTSC

PAL

H-rate, 1.75Vp-p

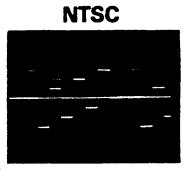
NTSC



PAL

H-rate, 1Vp-p

NTSC



PAL

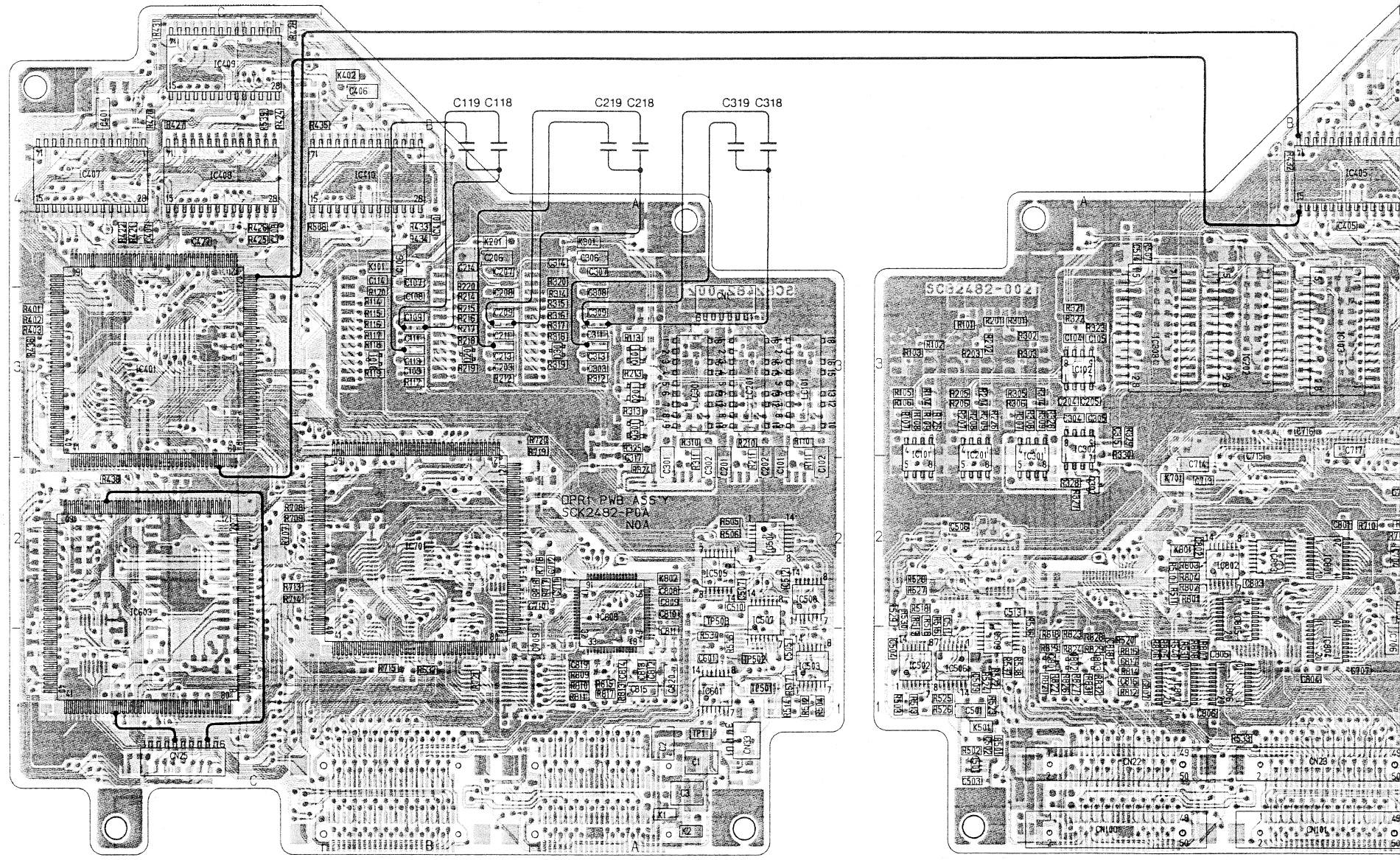
H-rate, 1.5Vp-p

DPR2

CP

91136

3.20 DPR1 CIRCUIT BOARD



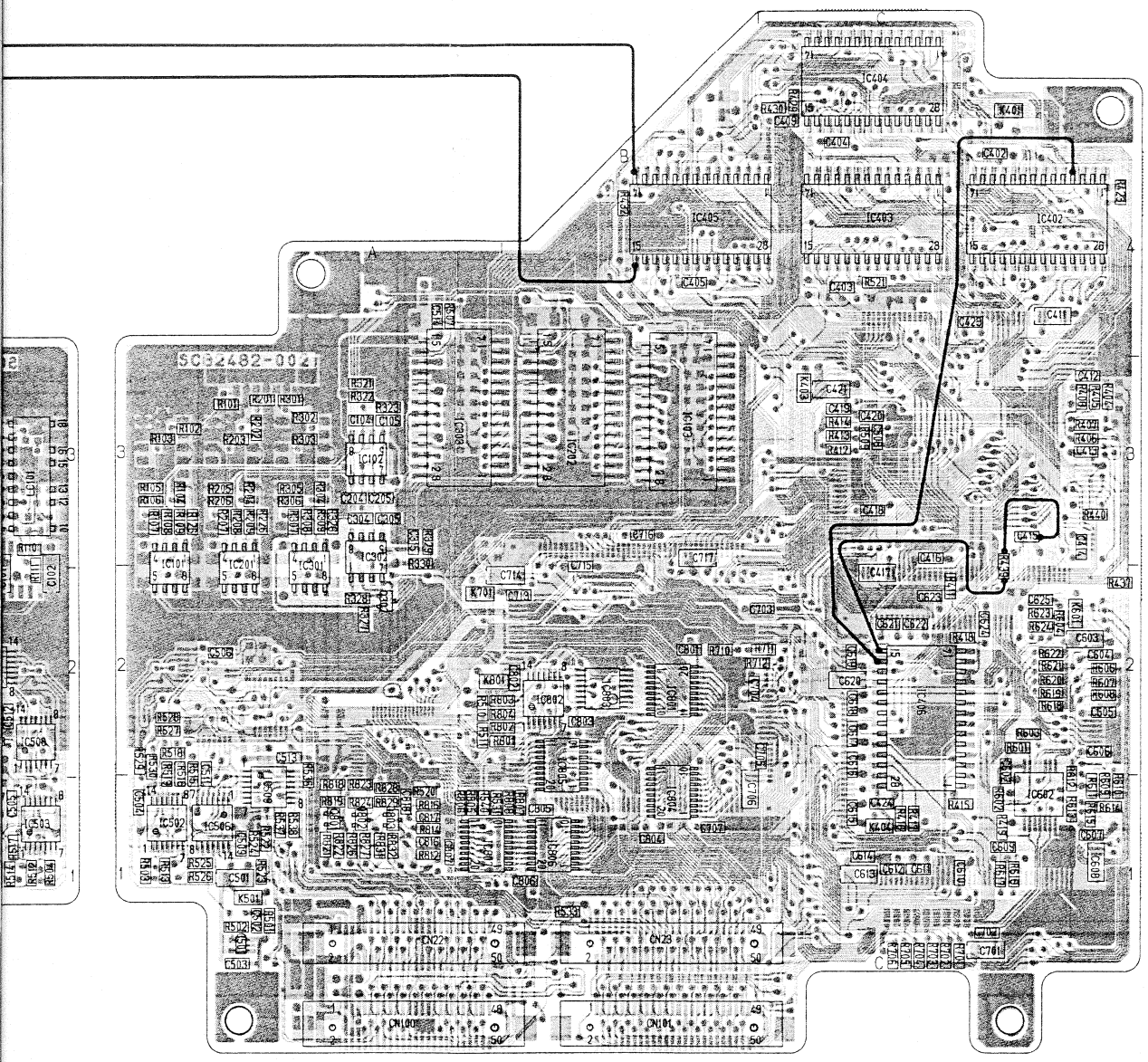
●ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

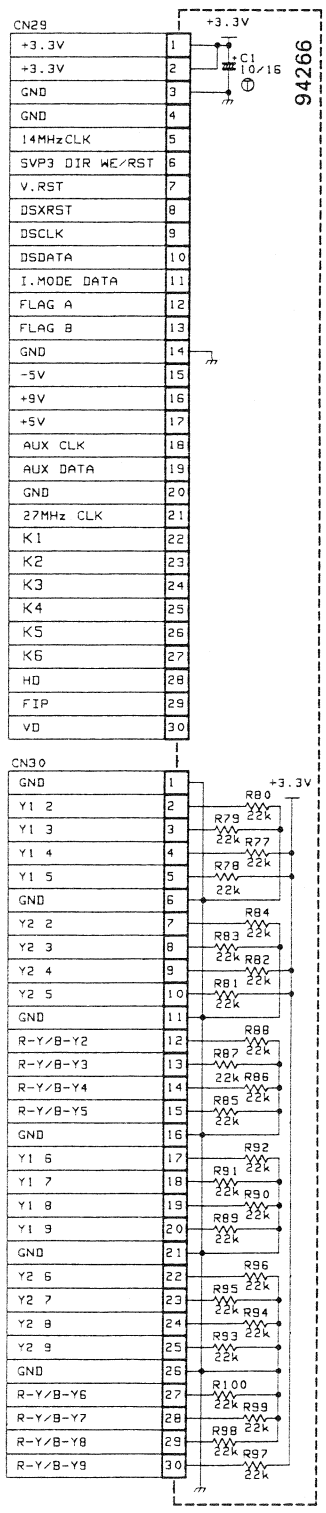
A-1C
Side — Y axis
X axis

IC101	B- 2A	IC806	B- 1B	R126	B- 3A	R315	A- 3B	R423	B- 4C	R519	B- 2A	R615	B- 1C	R806	B- 1B	C109	A- 3B	C401	A- 4C	C513
IC102	B- 3A	IC807	B- 1B	R201	B- 3A	R316	A- 3B	R424	A- 4C	R520	B- 1A	R616	B- 1C	R807	B- 1B	C110	A- 3B	C402	B- 4C	C514
IC103	B- 3B	IC808	A- 2A	R202	B- 3A	R317	A- 3B	R425	A- 3C	R521	B- 3C	R617	B- 1C	R808	B- 1B	C111	A- 3B	C403	B- 3C	C601
IC201	B- 2A			R203	B- 3A	R318	A- 3B	R426	A- 3C	R522	B- 1A	R618	B- 2C	R809	A- 1A	C112	A- 3B	C404	B- 4C	C602
IC202	B- 3B	Q101	A- 3A	R204	B- 3A	R319	A- 3B	R427	A- 4C	R523	B- 1A	R619	B- 2C	R810	A- 1A	C113	A- 3B	C405	B- 3B	C603
IC301	B- 2A	Q201	A- 3A	R205	B- 3A	R320	A- 3B	R428	A- 4C	R524	B- 1A	R620	B- 2C	R811	A- 1A	C114	A- 3B	C406	A- 4B	C604
IC302	B- 2A	Q301	A- 3A	R206	B- 3A	R321	B- 3A	R429	B- 4C	R525	B- 1A	R621	B- 2C	R812	B- 1A	C201	A- 2A	C407	A- 3C	C605
IC303	B- 3B	Q302	B- 2A	R207	B- 3A	R322	B- 3A	R430	B- 4B	R526	B- 1A	R622	B- 2C	R813	A- 1A	C202	A- 2A	C408	A- 3C	C606
IC401	A- 3C	Q801	B- 1A	R208	B- 3A	R323	B- 3A	R431	A- 4C	R527	B- 2A	R623	B- 2C	R814	B- 1A	C203	A- 3B	C409	B- 4B	C607
IC402	B- 4C	Q802	B- 1A	R209	B- 3A	R324	A- 2A	R432	B- 4B	R528	B- 2A	R624	B- 2C	R815	A- 1A	C204	B- 3A	C410	A- 3B	C608
IC403	B- 4C	Q803	B- 1A	R210	A- 2A	R325	A- 2A	R433	A- 3B	R529	B- 2A	R701	B- 1C	R816	B- 1A	C205	B- 3A	C411	B- 3C	C609
IC404	B- 4C			R211	A- 2A	R326	B- 3A	R434	A- 3B	R530	B- 2A	R702	B- 1C	R817	A- 1A	C206	A- 3B	C412	B- 3C	C610
IC405	B- 4B	D101	A- 3B	R212	A- 3B	R327	B- 2A	R435	A- 4B	R531	B- 1B	R703	B- 1C	R818	B- 2A	C207	A- 3B	C413	B- 3C	C611
IC406	B- 2C	D201	A- 3B	R213	A- 3A	R328	B- 2A	R436	A- 3C	R532	A- 1B	R704	B- 1C	R819	B- 1A	C208	A- 3B	C414	B- 2C	C612
IC407	A- 4C	D301	A- 3B	R214	A- 3B	R329	B- 2A	R437	B- 2C	R533	B- 1B	R705	B- 1C	R821	B- 1A	C209	A- 3B	C415	B- 2C	C613
IC408	A- 4C			R215	A- 3B	R330	B- 2A	R438	A- 2C	R534	A- 2A	R706	B- 1C	R822	B- 1A	C210	A- 3B	C416	B- 2C	C614
IC409	A- 4C	R101	B- 3A	R216	A- 3B	R401	A- 3C	R439	B- 2C	R535	A- 1A	R707	A- 2C	R823	B- 2A	C211	A- 3B	C417	B- 2C	C615
IC410	A- 4B	R102	B- 3A	R217	A- 3B	R402	A- 3C	R440	B- 3C	R536	B- 2A	R708	A- 2B	R824	B- 1A	C212	A- 3B	C418	B- 3C	C616
IC501	B- 1A	R103	B- 3A	R218	A- 3B	R403	A- 3C	R501	B- 1A	R537	B- 1A	R709	A- 2B	R826	B- 1A	C213	A- 3B	C419	B- 3C	C617
IC502	B- 1A	R104	B- 3A	R219	A- 3B	R404	B- 3C	R502	B- 1A	R538	B- 1A	R710	B- 2B	R827	B- 1A	C214	A- 3B	C420	B- 3C	C618
IC503	A- 1A	R105	B- 3A	R220	A- 3B	R405	B- 3C	R503	B- 1A	R539	A- 4C	R711	B- 2B	R828	B- 2A	C301	A- 2A	C421	B- 3C	C619
IC504	A- 2A	R106	B- 3A	R226	B- 3A	R406	B- 3C	R504	A- 1A	R540	B- 1B	R712	B- 2B	R829	B- 1A	C302	A- 2A	C422	A- 3C	C620
IC505	A- 2A	R107	B- 3A	R301	B- 3A	R407	B- 3C	R505	A- 2A	R601	B- 2C	R713	A- 2C	R831	B- 1A	C303	A- 3A	C423	B- 3C	C621
IC506	B- 1A	R108	B- 3A	R302	B- 3A	R408	B- 3C	R506	A- 2A	R602	B- 1C	R714	A- 2C	R832	B- 1A	C304	B- 3A	C424	B- 1C	C622
IC507	A- 2A	R109	B- 3A	R303	B- 3A	R411	B- 2C	R507	B- 3A	R603	B- 2C	R715	A- 1B			C305	B- 3A	C501	B- 1A	C623
IC508	A- 2A	R110	A- 2A	R304	B- 3A	R412	B- 3C	R508	A- 3B	R604	B- 2C	R716	A- 2B	C1	A- 1A	C306	A- 3A	C502	B- 1A	C624
IC509	B- 2A	R111	A- 2A	R305	B- 3A	R413	B- 3C	R509	B- 3C	R605	A- 1B	R717	A- 2B	C2	A- 1A	C307	A- 3A	C503	B- 1A	C625
IC601	A- 1A	R112	A- 3B	R306	B- 3A	R414	B- 3C	R510	B- 2B	R606	B- 2C	R718	A- 2B	C3	A- 1A	C308	A- 3A	C504	B- 1A	C701
IC602	B- 1C	R113	A- 3A	R307	B- 3A	R415	B- 1C	R511	B- 2B	R607	B- 2C	R719	A- 2B	C101	A- 2A	C309	A- 3A	C505	A- 1A	C702
IC603	A- 2C	R114	A- 3B	R308	B- 3A	R416	B- 1C	R512	A- 1A	R608	B- 2C	R720	A- 2B	C102	A- 2A	C310	A- 3A	C506	B- 2A	C703
IC701	A- 2B	R115	A- 3B	R309	B- 3A	R417	B- 1C	R513	B- 1A	R609	B- 2C	R721	A- 1B	C103	A- 3B	C311	A- 3A	C507	A- 2A	C704
IC801	B- 2B	R116	A- 3B	R310	A- 2A	R418	B- 2C	R514	A- 1A	R610	B- 2C	R801	B- 2B	C104	B- 3A	C312	A- 3A	C508	B- 3C	C705
IC802	B- 2B	R117	A- 3B	R311	A- 2A	R419	B- 1C	R515	B- 2A	R611	B- 2C	R802	B- 2B	C105	B- 3A	C313	A- 3A	C509	B- 1A	C706
IC803	B- 2B	R118	A- 3B	R312	A- 3A	R420	A- 4C	R516	B- 2A	R612	B- 2C	R803	B- 2B	C106	A- 3B	C314	A- 3B	C510	A- 2A	C707
IC804	B- 1B	R119	A- 3B	R313	A- 3A	R421	A- 3C	R517	A- 1A	R613	B- 1C	R804	B- 2B	C107	A- 3B	C315	B- 2A	C511	B- 2A	C709
IC805	B- 2B	R120	A- 3B	R314	A- 3B	R422	A- 3C	R518	B- 2A	R614	B- 1C	R805	B- 1B	C108	A- 3B	C317	A- 2A	C512	A- 2A	C710

– Side B –

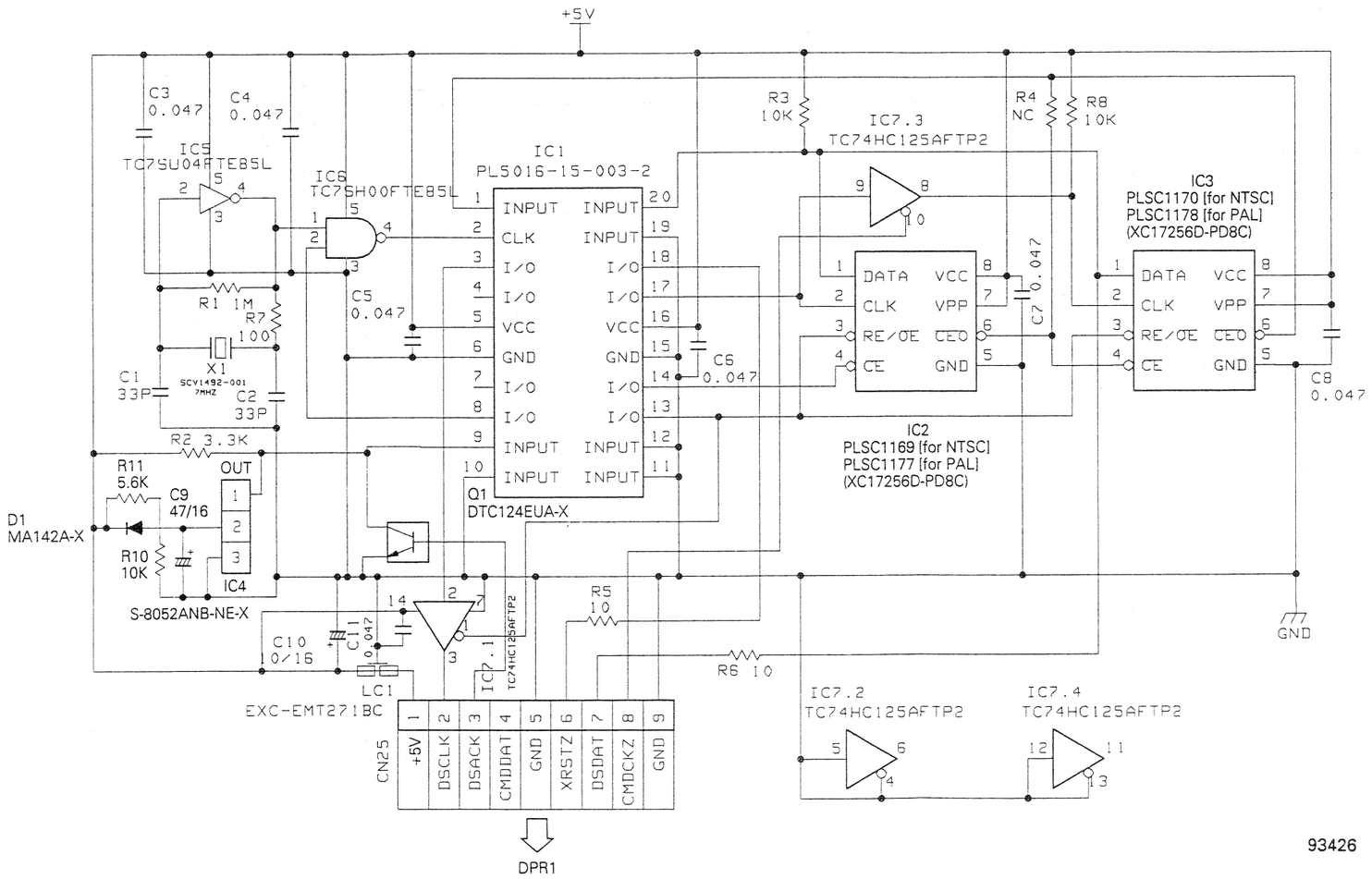


3.21 DPR2 BOARD SCHEMATIC DIAGRAM 09



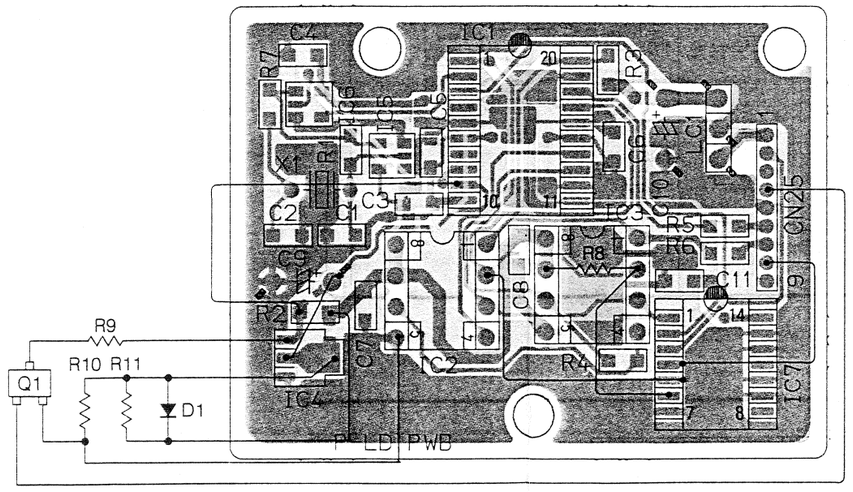
B- 2A	R615	B- 1C	R806	B- 1B	C109	A- 3B	C401	A- 4C	C513	B- 2A	C711	A- 2B	K201	A- 3B	
B- 1A	R616	B- 1C	R807	B- 1B	C110	A- 3B	C402	B- 4C	C514	B- 3A	C712	A- 2B	K301	A- 3A	
B- 3C	R617	B- 1C	R808	B- 1B	C111	A- 3B	C403	B- 3C	C601	A- 1A	C713	B- 2B	K401	B- 4C	
B- 1A	R618	B- 2C	R809	A- 1A	C112	A- 3B	C404	B- 4C	C602	B- 2C	C714	B- 2B	K402	A- 4B	
B- 1A	R619	B- 2C	R810	A- 1A	C113	A- 3B	C405	B- 3B	C603	B- 2C	C715	B- 2B	K403	B- 3C	
B- 1A	R620	B- 2C	R811	A- 1A	C114	A- 3B	C406	A- 4B	C604	B- 2C	C716	B- 2B	K404	B- 1C	
B- 1A	R621	B- 2C	R812	B- 1A	C201	A- 2A	C407	A- 3C	C605	B- 2C	C717	B- 2B	K501	B- 1A	
B- 1A	R622	B- 2C	R813	A- 1A	C202	A- 2A	C408	A- 3C	C606	B- 2C	C801	B- 2B	K601	B- 2C	
B- 2A	R623	B- 2C	R814	B- 1A	C203	A- 3B	C409	B- 4B	C607	B- 1C	C802	B- 2B	K701	B- 2B	
B- 2A	R624	B- 2C	R815	A- 1A	C204	B- 3A	C410	A- 3B	C608	B- 1C	C803	B- 2B	K801	B- 2B	
B- 2A	R701	B- 1C	R816	B- 1A	C205	B- 3A	C411	B- 3C	C609	B- 1C	C804	B- 1B	K802	A- 2A	
B- 2A	R702	B- 1C	R817	A- 1A	C206	A- 3B	C412	B- 3C	C610	B- 1C	C805	B- 1B			
B- 1B	R703	B- 1C	R818	B- 2A	C207	A- 3B	C413	B- 3C	C611	B- 1C	C806	B- 1B	LC101	A- 3A	
A- 1B	R704	B- 1C	R819	B- 1A	C208	A- 3B	C414	B- 2C	C612	B- 1C	C807	B- 1A	LC201	A- 3A	
B- 1B	R705	B- 1C	R821	B- 1A	C209	A- 3B	C415	B- 2C	C613	B- 1C	C808	A- 2A	LC301	A- 3A	
A- 2A	R706	B- 1C	R822	B- 1A	C210	A- 3B	C416	B- 2C	C614	B- 1C	C809	A- 2A			
A- 1A	R707	A- 2C	R823	B- 2A	C211	A- 3B	C417	B- 2C	C615	B- 1C	C810	A- 2A	CN1	A- 3A	
B- 2A	R708	A- 2B	R824	B- 1A	C212	A- 3B	C418	B- 3C	C616	B- 2C	C811	A- 2A	CN22	B- 1A	
B- 1A	R709	A- 2B	R826	B- 1A	C213	A- 3B	C419	B- 3C	C617	B- 2C	C812	A- 1A	CN23	B- 1B	
B- 1A	R710	B- 2B	R827	B- 1A	C214	A- 3B	C420	B- 3C	C618	B- 2C	C813	A- 1A	CN25	A- 1C	
A- 4C	R711	B- 2B	R828	B- 2A	C301	A- 2A	C421	B- 3C	C619	B- 2C	C814	A- 1A	CN33	A- 1A	
B- 1B	R712	B- 2B	R829	B- 1A	C302	A- 2A	C422	A- 3C	C620	B- 2C	C815	A- 1A	CN100	B- 1A	
B- 2C	R713	A- 2C	R831	B- 1A	C303	A- 3A	C423	B- 3C	C621	B- 2C	C816	B- 1A	CN101	B- 1B	
B- 1C	R714	A- 2C	R832	B- 1A	C304	B- 3A	C424	B- 1C	C622	B- 2C	C817	B- 1A			
B- 2C	R715	A- 1B			C305	B- 3A	C501	B- 1A	C623	B- 2C	C818	B- 1A			
B- 2C	R716	A- 2B	C1	A- 1A	C306	A- 3A	C502	B- 1A	C624	B- 2C	C819	A- 1A			
A- 1B	R717	A- 2B	C2	A- 1A	C307	A- 3A	C503	B- 1A	C625	B- 2C	C820	A- 1A			
B- 2C	R718	A- 2B	C3	A- 1A	C308	A- 3A	C504	B- 1A	C701	B- 1C					
B- 2C	R719	A- 2B	C101	A- 2A	C309	A- 3A	C505	A- 1A	C702	B- 1C	TP1	A- 1A			
B- 2C	R720	A- 2B	C102	A- 2A	C310	A- 3A	C506	B- 2A	C703	B- 2B	TP501	A- 1A			
B- 2C	R721	A- 1B	C103	A- 3B	C311	A- 3A	C507	A- 2A	C704	B- 2B	TP502	A- 1A			
B- 2C	R801	B- 2B	C104	B- 3A	C312	A- 3A	C508	B- 3C	C705	B- 2B	TP503	A- 2A			
B- 2C	R802	B- 2B	C105	B- 3A	C313	A- 3A	C509	B- 1A	C706	B- 2B					
B- 2C	R803	B- 2B	C106	A- 3B	C314	A- 3B	C510	A- 2A	C707	B- 1B	K1	A- 1A			
B- 1C	R804	B- 2B	C107	A- 3B	C315	B- 2A	C511	B- 2A	C709	A- 2B	K2	A- 1A			
B- 1C	R805	B- 1B	C108	A- 3B	C317	A- 2A	C512	A- 2A	C710	A- 2B	K101	A- 3B			

3.22 P-LD BOARD SCHEMATIC DIAGRAM 10

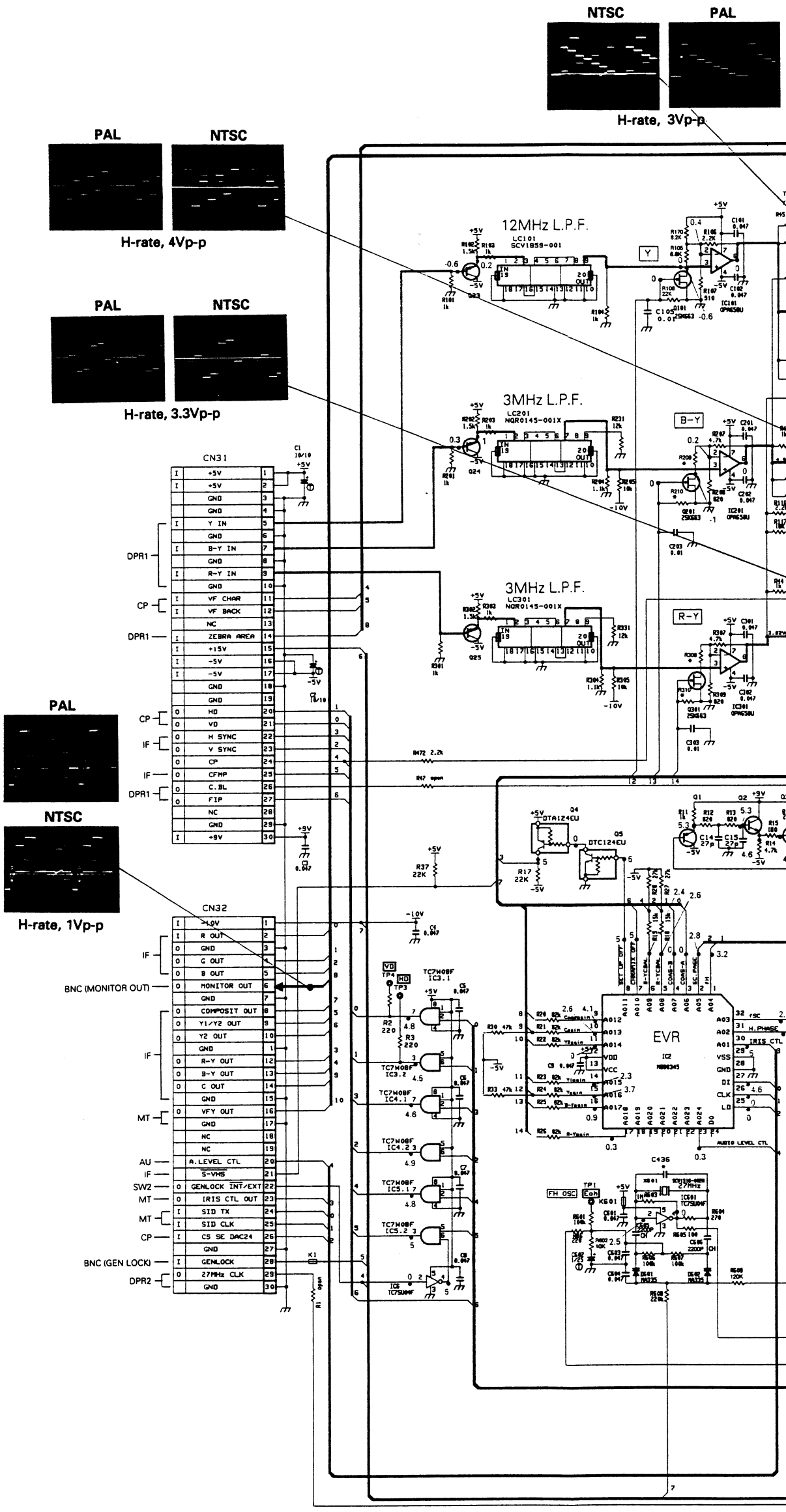


93426

3.23 P-LD CIRCUIT BOARD



3.24 SE BOARD SCHEMATIC DIAGRAM 11

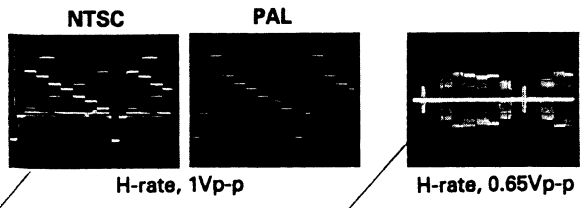


IC2 Pin Assignment

Pin No.	Name	Pin No.	Name	Pin No.	Name	Pin No.	Name
1	fH	9	Composite GAIN	17	R-Y GAIN	25	LD
2	SC Phase	10	C GAIN	18	—	26	CLK
3	SC Coarse A	11	Y2 GAIN	19	—	27	DI
4	SC Coarse B	12	VDD	20	—	28	GND
5	R-Y C Balance	13	VCC	21	—	29	VSS
6	B-Y C Balance	14	Y1 GAIN	22	—	30	Iris CTL
7	Charactor Mix OFF	15	Y GAIN	23	Audio Level CTL	31	H. Phase
8	Set up OFF	16	B-Y GAIN	24	—	32	fsc

*	R4	R7	R90	R91	R127	R128	R136	R140	R149	R160	R209	R210	R213	R216
NTSC	1M	0	15K	15K	27K	6.8K	15K	560	15K	27K	5.6K	15K	33K	100
PAL	0	1M	180K	330K	56K	5.6K	22K	560	22K	22K	8.2K	22K	3.9K	150

Name	Pin No.	Name	Pin No.	Name
Composite GAIN	17	R-Y GAIN	25	LD
C GAIN	18	—	26	CLK
Y2 GAIN	19	—	27	DI
VDD	20	—	28	GND
VCC	21	—	29	VSS
Y1 GAIN	22	—	30	Iris CTL
Y GAIN	23	Audio Level CTL	31	H. Phase
B-Y GAIN	24	—	32	fsc



S-VHS

IC401, IC410
CHROMA MODURATOR

Fsc B.P.F.

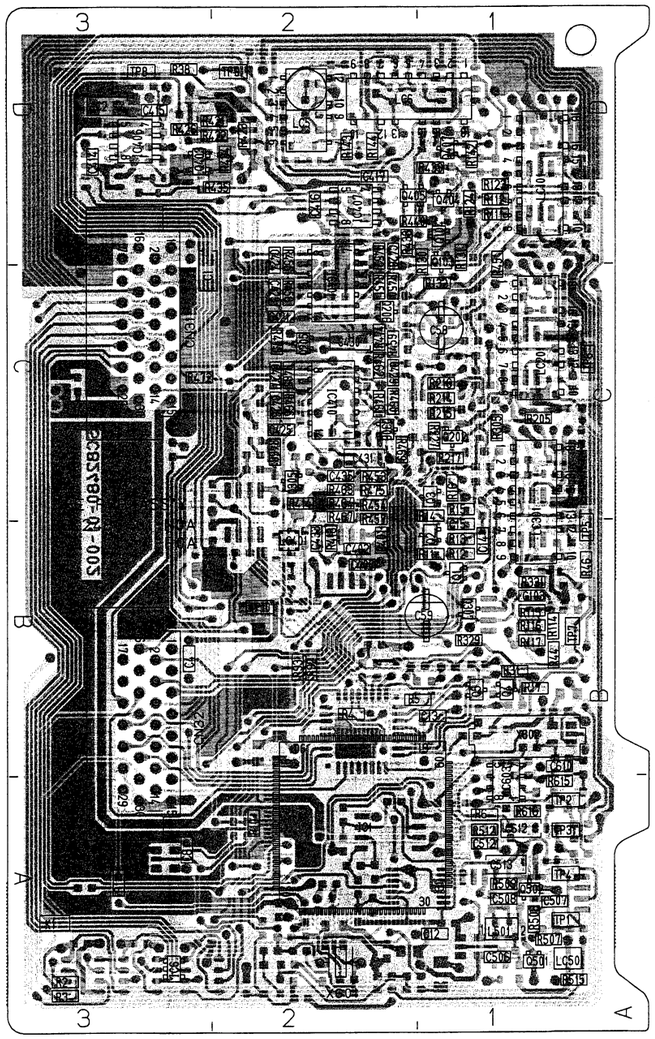
NTSC : 14.31818MHz
PAL : 17.734475MHz

COLOR BAR GEN.
C. DECORDER
V. DECORDER
H. DECORDER
COUNT DOWN
PHASE SHIFT
1/4
PHASE CONPERETER
SYNC SIGNAL GENERATOR
PHASE COMPARATOR
H. SEP
V. SEP
EXT/IN DET
H PHASE SHIFTER

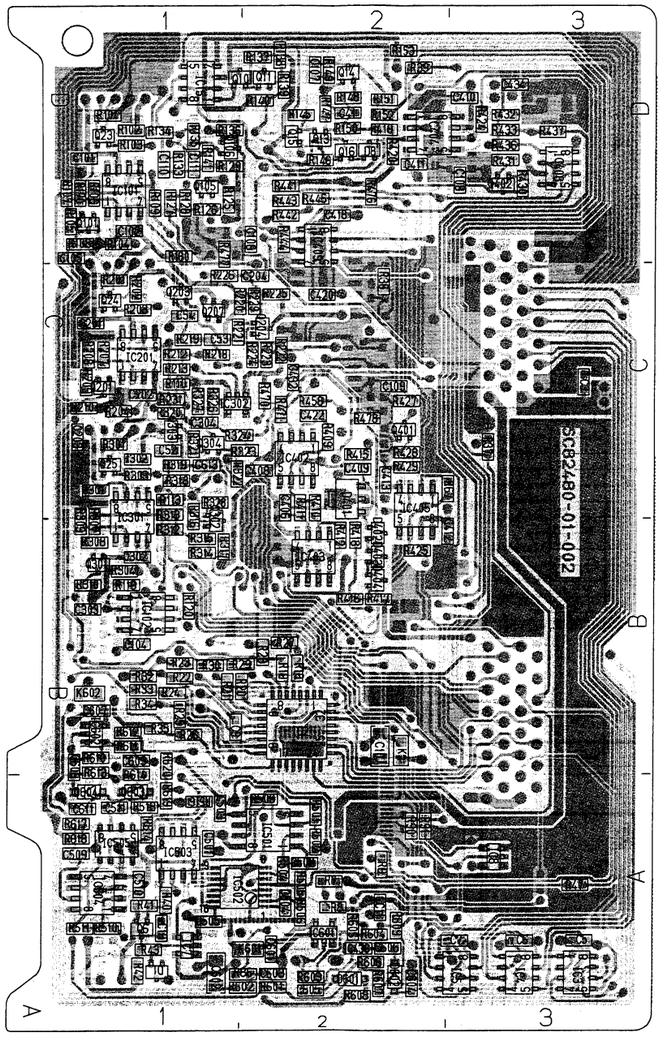
*	R4	R7	R90	R91	R127	R128	R136	R140	R149	R160	R209	R210	R213	R216	R224	R227	R308	R310	R313	R324	R326	R328	R429	R430	R431	R432	R701	R702	C304	C433	C434	C436	C506	C507
NTSC	1M	0	15K	15K	27K	6.8K	15K	560	15K	27K	5.6K	15K	33K	100	15K	150	5.6K	15K	15K	22K	OPEN	150	OPEN	15K	8.2K	1.8K	OPEN	0	OPEN	22P	12P	18P	150P	OPEN
PAL	0	1M	180K	330K	56K	5.6K	22K	560	22K	22K	8.2K	22K	3.9K	150	18K	100	8.2K	22K	2.7K	22K	4.7K	100	15K	22K	15K	15K	0	OPEN	0	15P	9P	OPEN	120P	OPEN

3.25 SE CIRCUIT BOARD

– Side A –

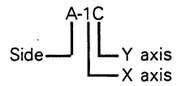


– Side B –



●ADDRESS TABLE OF BOARD PARTS

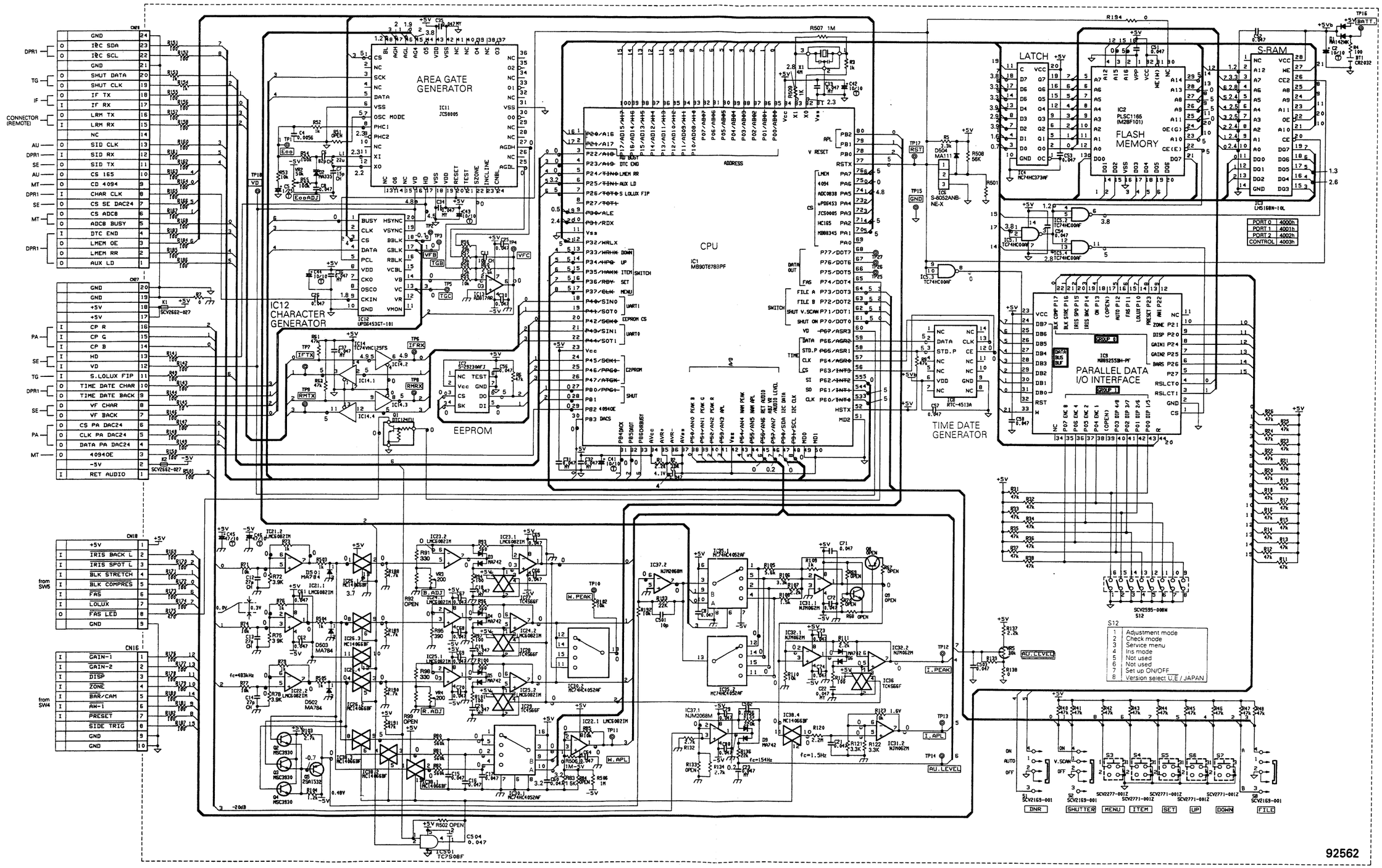
Each address may have an address error by one interval.



IC1	A- 2A	D604	B- 1A	R134	B- 1D	R418	B- 2B	R613	B- 1B	C504	B- 2A
IC2	B- 2B			R135	B- 1D	R419	B- 2D	R614	B- 1B	C505	B- 1A
IC3	B- 3A	R1	A- 3A	R136	B- 1D	R420	B- 2D	R615	A- 1A	C506	A- 1A
IC4	B- 3A	R2	A- 3A	R137	B- 2D	R421	A- 2D	R616	A- 1A	C507	A- 1A
IC5	B- 3A	R3	A- 3A	R138	B- 2D	R422	A- 2D	R617	B- 1A	C508	A- 1A
IC6	A- 3A	R4	A- 2B	R139	B- 2D	R423	A- 2D	R618	B- 1A	C509	B- 1A
IC7	B- 1A	R5	A- 1B	R140	B- 2D	R424	B- 3D	R619	B- 1A	C510	B- 1A
IC8	B- 3A	R6	A- 1A	R141	B- 1D	R425	B- 2B	R620	B- 1B	C511	B- 1A
IC15	B- 1D	R7	B- 2A	R142	A- 1D	R426	A- 3D			C512	A- 1A
IC101	B- 1D	R8	B- 2A	R143	A- 2D	R427	B- 2C	C1	A- 3C	C513	A- 1A
IC102	B- 1B	R9	B- 2A	R144	A- 2D	R428	B- 2C	C2	A- 3D	C601	B- 2A
IC201	B- 1C	R10	A- 2A	R145	B- 2D	R429	B- 2C	C3	B- 3C	C602	B- 1A
IC301	B- 1C	R11	A- 1B	R146	B- 2D	R430	B- 3D	C4	A- 3B	C603	B- 2A
IC302	B- 1C	R12	A- 1B	R147	B- 2D	R431	B- 3D	C5	B- 3A	C604	B- 2A
IC401	A- 2C	R13	A- 1B	R148	B- 2D	R432	B- 3D	C6	B- 3A	C605	B- 2A
IC402	B- 2C	R14	A- 1C	R149	B- 2D	R433	B- 3D	C7	B- 3A	C606	B- 2A
IC403	B- 2B	R15	A- 1C	R150	B- 2D	R434	A- 2D	C8	A- 3A	C607	B- 1B
IC404	B- 2D	R16	A- 1C	R151	B- 2D	R435	A- 2D	C9	B- 1B	C608	B- 1B
IC405	B- 2C	R17	A- 1B	R152	B- 2D	R436	B- 3D	C10	B- 2B	C609	B- 1B
IC406	A- 3D	R18	B- 2B	R153	B- 2D	R437	B- 3D	C11	B- 2A	C610	A- 1B
IC407	A- 2D	R19	B- 2B	R160	B- 1D	R438	A- 2D	C12	A- 1A	C611	B- 1A
IC408	B- 3D	R20	B- 2B	R170	B- 1D	R439	A- 1D	C13	A- 1B	C612	A- 1A
IC409	B- 2D	R21	B- 1B	R201	B- 1C	R440	A- 2D	C14	A- 1B	C613	B- 1C
IC410	A- 2C	R22	B- 1B	R202	B- 1C	R441	B- 2D	C15	A- 1B		
IC501	B- 2A	R23	B- 1B	R203	B- 1C	R442	B- 2D	C16	B- 1A	L501	A- 1A
IC502	B- 1A	R24	B- 1B	R204	B- 1C	R443	B- 2D	C41	B- 2D		
IC503	B- 1A	R25	B- 1B	R205	A- 1C	R444	B- 2D	C52	B- 1C	TP1	A- 1A
IC504	B- 1A	R26	B- 1B	R207	B- 1C	R445	B- 2D	C53	B- 1C	TP2	A- 1A
IC505	B- 1A	R27	B- 2B	R208	B- 1C	R450	A- 2C	C54	B- 1C	TP3	A- 1A
IC601	B- 2A	R28	B- 2B	R209	B- 1C	R451	A- 2C	C58	A- 1C	TP4	A- 1A
IC602	B- 1B	R29	B- 1B	R210	B- 1C	R452	A- 2D	C59	A- 1B	TP5	A- 1B
IC603	A- 1A	R30	B- 1B	R212	B- 1C	R453	A- 2C	C101	B- 1D	TP6	A- 1C
		R31	A- 1B	R213	B- 1C	R454	A- 2C	C102	B- 1D	TP7	A- 1B
Q1	A- 1B	R32	B- 1B	R214	A- 1C	R455	A- 2D	C103	A- 1B	TP8	A- 3D
Q2	A- 1B	R33	B- 1B	R215	A- 1C	R456	A- 2C	C104	B- 1B	TP9	A- 2D
Q3	A- 1C	R34	B- 1B	R216	A- 1C	R457	A- 2C	C105	B- 1D	TP10	A- 2B
Q4	A- 1B	R35	B- 1B	R217	A- 1C	R458	B- 2C	C106	B- 2D		
Q5	A- 1B	R36	B- 2C	R218	B- 1C	R459	A- 2C	C107	B- 2D	CN31	A- 3D
Q6	B- 1A	R37	B- 3C	R219	B- 1C	R460	A- 2C	C108	B- 3D	CN32	A- 3B
Q10	B- 1D	R38	A- 3D	R220	B- 1C	R461	A- 2C	C109	B- 2C		
Q11	B- 2D	R39	B- 2D	R221	B- 1C	R462	A- 2C	C110	B- 1D	K1	A- 3A
Q13	B- 2D	R40	B- 1A	R222	B- 2C	R463	A- 2C	C111	B- 1D	K2	B- 2B
Q14	B- 2D	R41	B- 1A	R223	B- 2C	R464	A- 2C	C201	B- 1C	K601	B- 2A
Q15	B- 2D	R42	B- 1A	R224	B- 2C	R465	A- 2C	C202	B- 1C	K602	B- 1B
Q16	B- 2D	R43	B- 1A	R225	B- 2C	R466	A- 2C	C203	B- 1C		
Q23	B- 1D	R44	A- 1B	R226	B- 1C	R467	A- 2C	C204	B- 2C	LC5	A- 2D
Q24	B- 1C	R45	A- 1C	R227	A- 1C	R468	A- 2C	C301	B- 1C	LC6	A- 2D
Q25	B- 1C	R46	A- 1B	R229	B- 2C	R469	A- 2C	C302	B- 1B	LC101	A- 1D
Q101	B- 1D	R47	B- 3A	R231	B- 1C	R470	B- 2C	C303	B- 1B	LC201	A- 1C
Q103	A- 1D	R67	B- 2C	R301	B- 1C	R471	B- 2C	C304	B- 1C	LC301	A- 1C
Q104	A- 1D	R86	B- 2A	R302	B- 1C	R472	A- 3C	C401	A- 2B	LC401	A- 2B
Q105	B- 1D	R90	B- 2A	R303	B- 1C	R473	A- 2C	C402	A- 2B	LC501	A- 1A
Q106	B- 1D	R91	B- 2A	R304	B- 1B	R474	A- 2C	C406	B- 2C		
Q201	B- 1C	R92	A- 2B	R305	A- 1C	R475	A- 2C	C407	A- 2B	X601	A- 2A
Q202	A- 1C	R93	A- 2B	R307	B- 1B	R476	B- 2D	C408	B- 2C	X602	A- 1B
Q203	B- 1C	R101	B- 1D	R308	B- 1B	R477	B- 1D	C409	B- 2C		
Q204	B- 2C	R102	B- 1D	R309	B- 1B	R478	B- 2C	C410	B- 3D		
Q205	A- 2C	R103	B- 1D	R310	B- 1B	R501	B- 2A	C411	B- 2D		
Q206	A- 2C	R104	B- 1D	R312	B- 1B	R502	B- 2A	C412	B- 2B		
Q207	B- 1C	R105	B- 1D	R313	B- 1C	R503	B- 2A	C413	B- 2C		
Q301	B- 1B	R106	B- 1D	R314	B- 1B	R504	B- 2A	C414	A- 3D		
Q302	B- 1B	R107	B- 1D	R315	B- 1B	R505	B- 2A	C415	A- 3D		
Q303	B- 1C	R108	B- 1D	R316	B- 1C	R506	B- 2A	C416	A- 2D		
Q304	B- 1C	R109	B- 1D	R317	B- 1B	R507	A- 1A	C417	A- 2D		
Q305	A- 2C	R110	B- 1C	R318	B- 1C	R508	A- 1A	C418	B- 2D		
Q306	A- 2C	R111	A- 1D	R319	B- 1C	R509	A- 1A	C420	B- 2C		
Q307	A- 1B	R112	A- 1D	R320	B- 1C	R510	B- 1A	C421	A- 2C		
Q401	B- 2C	R113	B- 1C	R321	B- 1C	R511	B- 1A	C422	B- 2C		
Q402	B- 3D	R114	A- 1B	R322	B- 1C	R512	A- 1A	C423	A- 2C		
Q403	A- 3D	R115	A- 1B	R323	B- 2C	R513	B- 1A	C424	A- 2D		
Q404	A- 1D	R116	A- 1B	R324	B- 1C	R514	B- 1A	C425	A- 2C		
Q405	A- 2D	R117	A- 1B	R326	B- 1C	R515	A- 1A	C426	A- 2C		
Q407	A- 1D	R119	B- 1B	R327	B- 1C	R516	B- 1A	C427	A- 2C		
Q501	A- 1A	R120	B- 1B	R328	B- 1C	R601	B- 2A	C428	A- 2D		
Q502	A- 1A	R123	A- 1D	R329	A- 1B	R602	B- 2A	C429	A- 2C		
		R124	A- 1D	R331	A- 1B	R603	B- 2A	C430	A- 2C		
D1	B- 1A	R125	B- 1D	R409	B- 2C	R604	B- 2A	C431	A- 2C		
D8	B- 2D	R126	B- 1D	R410	B- 2C	R605	B- 2A	C432	B- 2C		
D401	B- 2C	R127	B- 1D	R411	B- 2C	R606	B- 2A	C433	A- 2B		
D402	B- 2B	R128	B- 1D	R412	B- 2B	R607	B- 2A	C434	B- 3D		
D403	B- 2B	R129	B- 1D	R413	A- 2B	R608	B- 2A	C435	A- 2C		
D404	B- 2B	R130	A- 1D	R414	A- 2C	R609	B- 2A	C436	B- 2A		
D601	B- 2A	R131	A- 1D	R415	B- 2C	R610	B- 1B	C501	B- 1A		
D602	B- 2A	R132	A- 1C	R416	B- 2B	R611	B- 1B	C502	B- 2A		
D603	B- 1A	R133	B- 1D	R417	B- 2B	R612	B- 1B	C503	B- 1A		

3-25

3.26 CP BOARD SCHEMATIC DIAGRAM 1 2



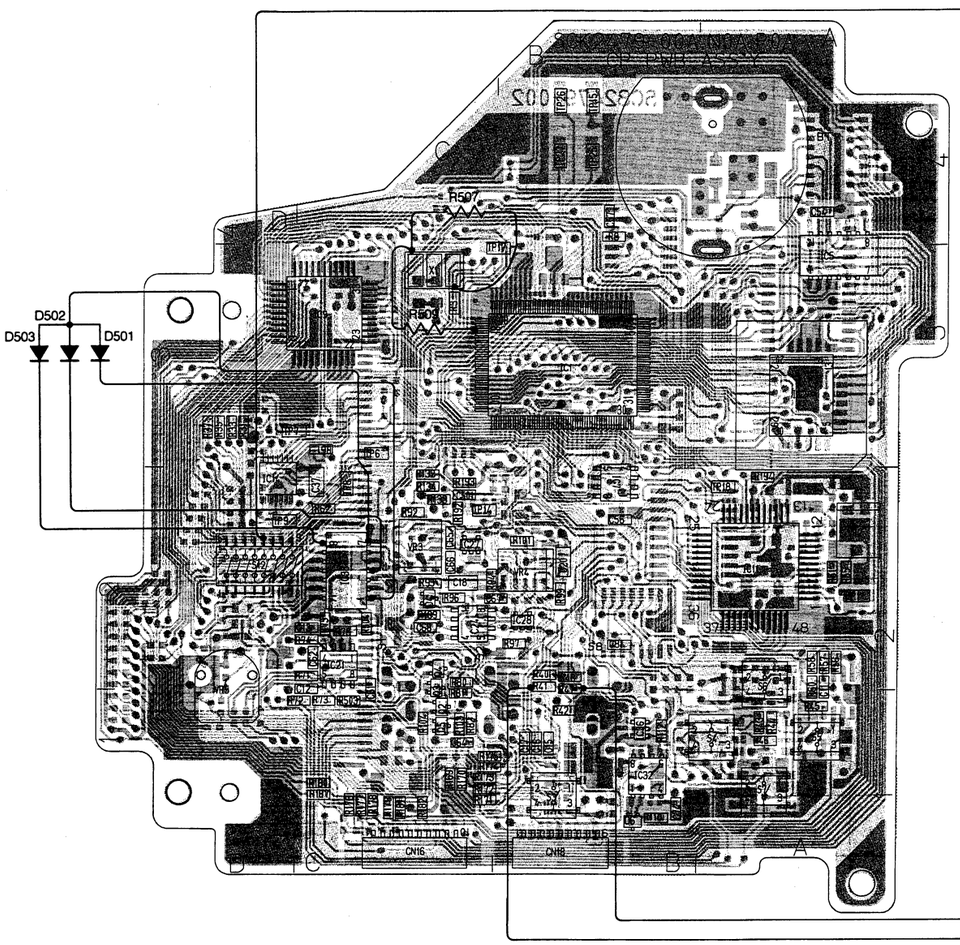
IC30, IC35

CONTROL INPUT		ON CHANNEL
A	B	
L	L	1, 12
L	H	5, 14
H	L	2, 15
H	H	4, 11

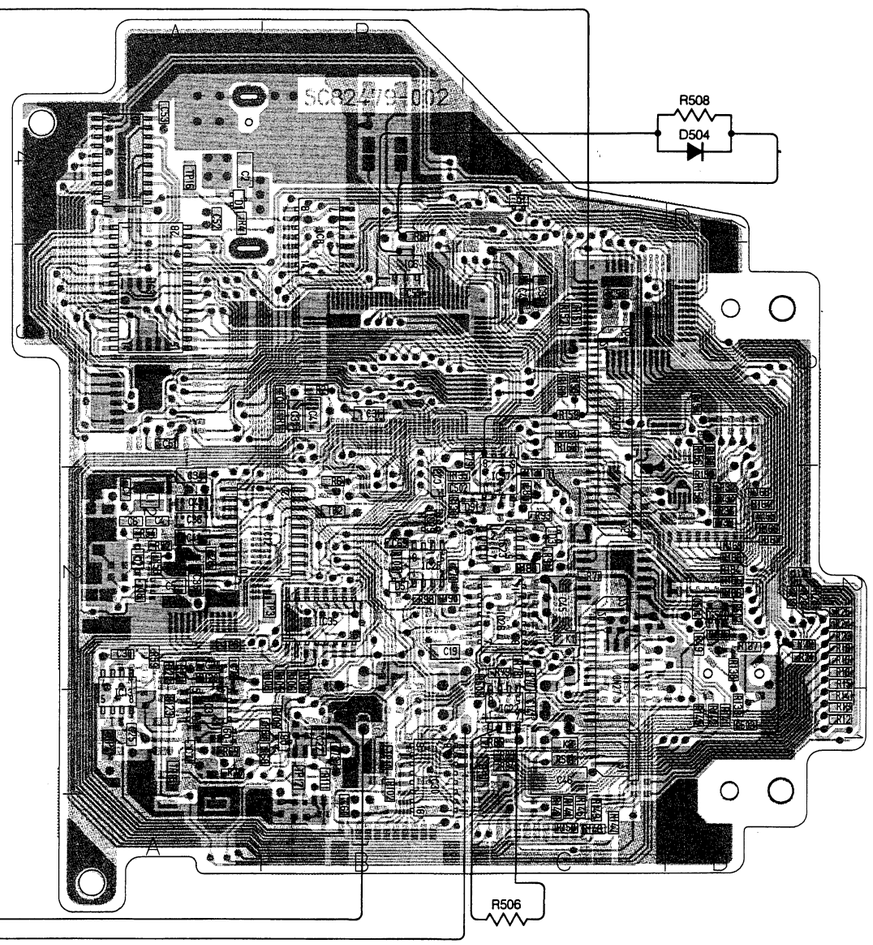
3-26

3.27 CP CIRCUIT BOARD

– Side A –



– Side B –



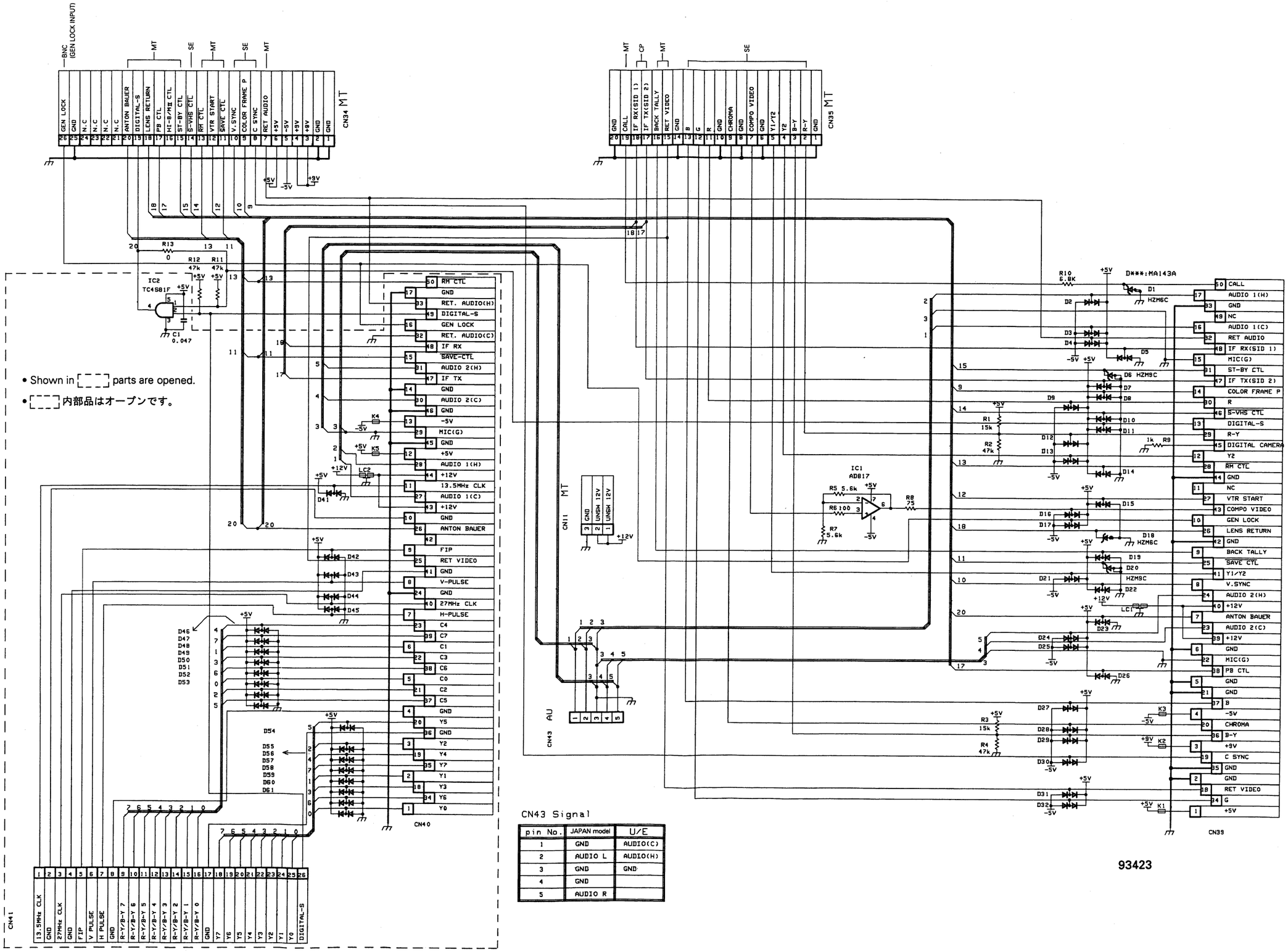
●ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

A-1C
Side — Y axis
X axis

IC1	A- 3B	IC38	A- 2C	R12	B- 1D	R45	A- 1A	R78	B- 2C	R111	B- 1B	R154	B- 3D	R182	A- 1C	C6	B- 2A	C43	B- 2A	C81	A- 2B	TP27	A- 4B
IC2	A- 3A	IC501	B- 2D	R13	B- 1D	R46	A- 1A	R79	B- 2C	R112	A- 1B	R155	B- 3D	R183	B- 2D	C7	B- 2A	C44	B- 2A	C501	A- 2C		
IC3	B- 4A			R14	B- 2D	R47	A- 2B	R80	A- 2C	R120	B- 2A	R156	B- 3D	R184	B- 2D	C8	B- 2A	C45	B- 2C	C502	B- 3B	CN16	A- 1C
IC4	B- 4A	Q1	B- 4C	R15	B- 2D	R48	A- 2B	R81	A- 2C	R121	B- 2A	R157	B- 3D	R185	B- 2D	C11	A- 2A	C46	B- 1C	C503	B- 1D	CN18	A- 1B
IC5	A- 4A	Q2	A- 1C	R16	B- 2D	R49	B- 2D	R82	A- 1C	R122	B- 2A	R158	B- 2D	R186	B- 2D	C12	A- 2C	C51	B- 3A	C504	B- 2D	CN27	B- 2C
IC6	B- 4B	Q3	A- 2C	R17	B- 2D	R51	A- 2A	R83	B- 1C	R123	B- 1A	R159	B- 3C	R187	A- 1C	C13	A- 2C	C52	B- 4A			CN28	B- 3C
IC7	A- 2B	Q4	A- 2C	R18	B- 2D	R52	B- 2A	R84	B- 1C	R131	B- 3C	R160	B- 3C	R188	B- 2C	C14	B- 1C	C53	B- 4A	L1	B- 2A		
IC8	B- 4B	Q5	A- 1C	R19	B- 2D	R53	B- 2A	R85	B- 1C	R132	A- 3C	R161	B- 3C	R189	A- 2C	C15	A- 1B	C54	A- 4A			K1	B- 2C
IC9	A- 3C	Q8	B- 1B	R20	B- 2D	R54	B- 2A	R91	B- 2C	R133	A- 2C	R162	B- 3C	R190	B- 2B	C16	A- 1B	C55	B- 3B	TP1	A- 2A	K2	B- 1C
IC11	A- 2A	Q9	B- 1A	R21	B- 2D	R55	A- 2A	R92	A- 2C	R134	A- 3C	R163	B- 2D	R191	B- 2D	C17	A- 1B	C56	A- 2B	TP2	B- 2B		
IC12	B- 2B			R22	B- 2D	R56	A- 2A	R93	B- 2C	R135	B- 3B	R164	B- 2D	R192	A- 2C	C18	A- 2C	C57	A- 4B	TP3	B- 2B	S1	A- 2C
IC13	B- 2A	D1	B- 4A	R23	B- 2D	R57	A- 2A	R94	A- 2C	R136	B- 2B	R165	B- 2D	R193	A- 3C	C19	B- 2B	C58	B- 3C	TP4	B- 1A	S2	A- 2B
IC14	A- 3D	D2	B- 2A	R24	B- 2D	R58	A- 2A	R95	A- 2C	R137	B- 2D	R166	B- 2D	R194	A- 3A	C20	A- 2B	C60	B- 1B	TP5	B- 2A	S3	A- 1B
IC21	A- 2C	D3	B- 2C	R25	B- 2D	R59	B- 2A	R96	A- 2C	R138	B- 2D	R167	B- 2D	R501	B- 1C	C21	B- 2A	C61	A- 2C	TP6	A- 3C	S4	A- 1A
IC22	B- 1C	D4	A- 2C	R26	B- 2D	R60	A- 2A	R97	A- 2B	R139	B- 1D	R168	B- 2D	R502	B- 2D	C22	B- 1B	C62	A- 2C	TP7	A- 3D	S5	A- 1A
IC23	B- 2C	D5	B- 2B	R31	A- 3D	R61	A- 3C	R98	B- 2B	R141	B- 1D	R169	A- 1C	R503	A- 2C	C23	B- 3B	C64	A- 1C	TP8	A- 3C	S6	A- 2A
IC24	A- 2C	D6	A- 1B	R32	B- 3D	R62	A- 2C	R99	A- 2B	R142	B- 1D	R170	A- 1C	R504	A- 2C	C25	B- 1A	C65	A- 2C	TP9	A- 2D	S7	A- 1A
IC25	B- 2B	D9	B- 2C	R33	A- 3D	R67	B- 1B	R100	B- 2B	R143	B- 1C	R171	A- 1C	R505	B- 2C	C26	B- 2A	C66	A- 2C	TP10	B- 1B	S8	A- 2B
IC26	B- 2C			R34	B- 2D	R68	B- 1B	R101	A- 2B	R144	B- 1C	R172	A- 1C			C30	B- 2A	C67	A- 2C	TP11	B- 1C	S12	A- 2D
IC27	A- 2C	R1	B- 3B	R35	A- 3D	R69	B- 1A	R102	B- 1B	R145	B- 1D	R173	A- 1C	VR2	A- 2A	C31	B- 3B	C68	A- 2C	TP12	B- 1B		
IC28	A- 2B	R2	B- 3B	R36	B- 2D	R70	B- 1A	R103	A- 1C	R146	B- 1C	R174	A- 1C	VR3	A- 2C	C32	B- 3B	C69	B- 2B	TP13	B- 1A	BT1	A- 4A
IC29	B- 2B	R3	A- 3C	R37	A- 3D	R71	A- 2C	R104	A- 1C	R147	B- 1C	R175	A- 1C	VR4	A- 2B	C33	B- 3C	C70	B- 2B	TP14	A- 2C		
IC30	B- 1B	R4	B- 4A	R38	B- 2D	R72	A- 2D	R105	B- 2B	R148	B- 1C	R176	A- 1C	VR5	A- 2D	C34	B- 3A	C71	B- 1A	TP15	A- 4B	X1	A- 4C
IC31	B- 1A	R5	B- 4B	R40	A- 2B	R73	A- 2C	R106	B- 2B	R149	B- 1C	R177	A- 1C			C35	B- 2A	C72	B- 2A	TP16	B- 4A		
IC32	A- 1B	R6	B- 3B	R41	A- 2B	R74	A- 2C	R107	B- 2B	R150	B- 1C	R178	A- 1C	C1	B- 3B	C36	B- 2A	C73	B- 1B	TP17	A- 4C		
IC35	B- 2B	R7	B- 2C	R42	A- 1B	R75	A- 2C	R108	B- 2B	R151	B- 3C	R179	A- 1C	C2	B- 4A	C37	A- 3C	C74	A- 1B	TP18	A- 3A		
IC36	A- 1B	R8	A- 4B	R43	A- 1A	R76	A- 2C	R109	B- 1B	R152	B- 3C	R180	A- 1C	C4	B- 2A	C41	B- 3B	C79	B- 3C	TP25	A- 4B		
IC37	B- 3C	R11	B- 2D	R44	A- 1A	R77	B- 2C	R110	A- 1B	R153	B- 3C	R181	A- 1C	C5	B- 2A	C42	B- 3C	C80	B- 2C	TP26	A- 4B		

3.28 IF BOARD SCHEMATIC DIAGRAM 1 3

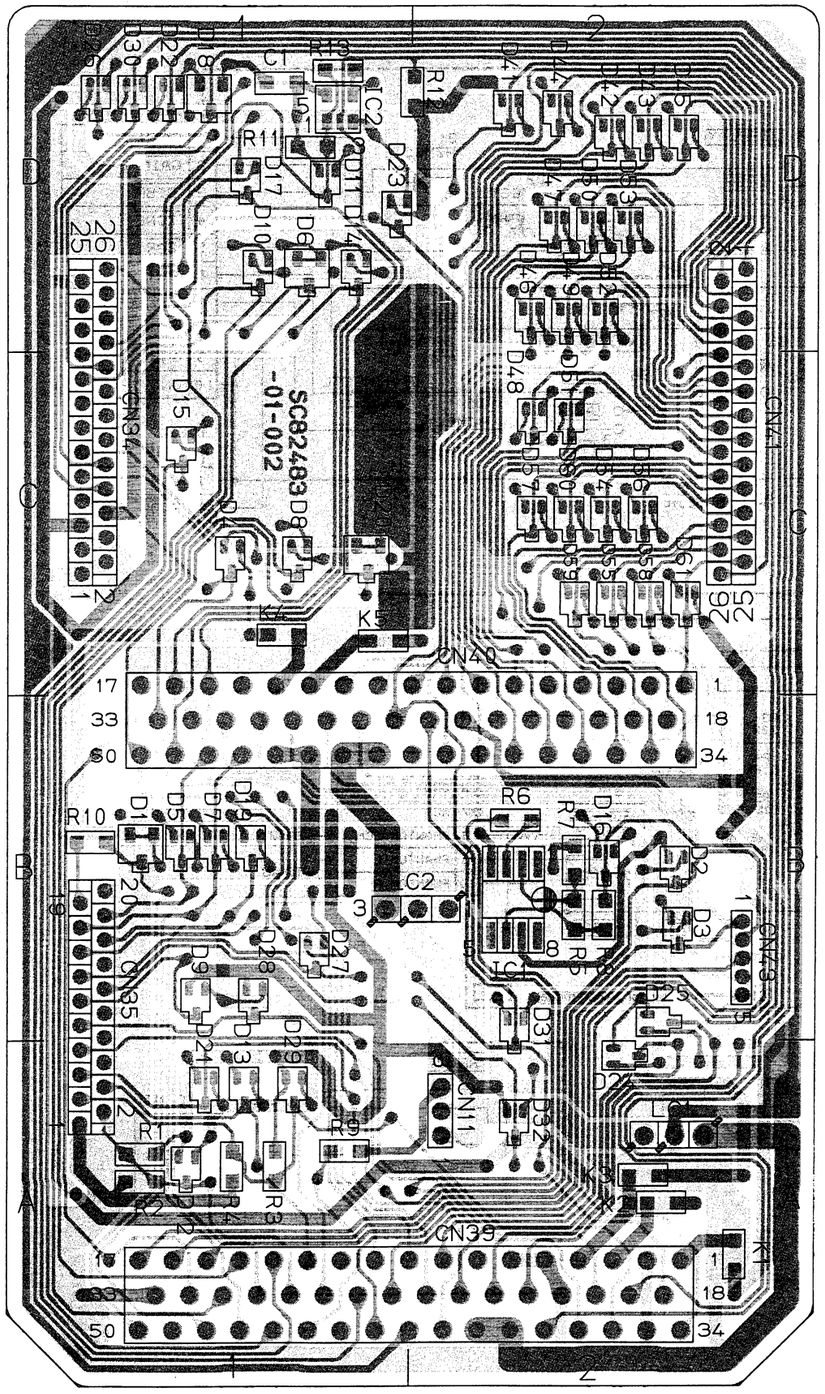


CN43 Signal

pin No.	JAPAN model	U/E
1	GND	AUDIO(C)
2	AUDIO L	AUDIO(H)
3	GND	GND
4	GND	
5	AUDIO R	

3-28

3.29 IF CIRCUIT BOARD



●ADDRESS TABLE OF BOARD PARTS

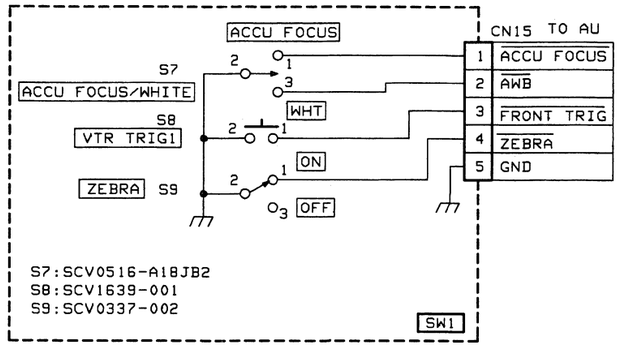
Each address may have an address error by one interval.

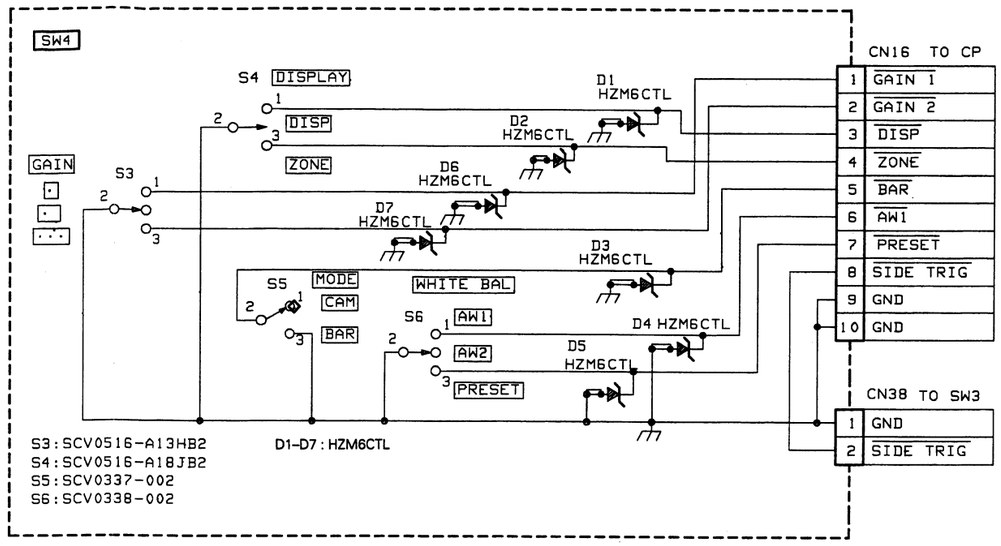
1C
└ Y axis
└ X axis

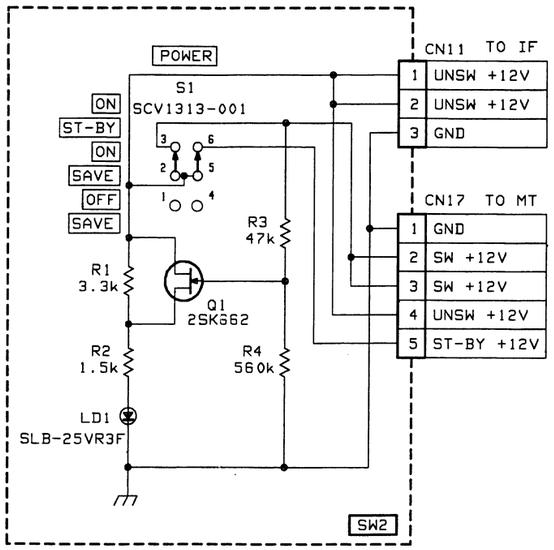
IC1	2B		R1	1A	
IC2	1D		R2	1A	
			R3	1A	
D1	1B		R4	1A	
D2	2B		R5	2B	
D3	2B		R6	2B	
D4	1C		R7	2B	
D5	1B		R8	2B	
D6	1D		R9	1A	
D7	1B		R10	1B	
D8	1C		R11	1D	
D9	1B		R12	2D	
D10	1D		R13	1D	
D11	1D				
D12	1A		C1	1D	
D13	1A				
D14	1D		CN11	2A	
D15	1C		CN34	1C	
D16	2B		CN35	1A	
D17	1D		CN39	2A	
D18	1D		CN40	2B	
D19	1B		CN41	2D	
D20	1C		CN43	2B	
D21	1A				
D22	1D		K1	2A	
D23	1D		K2	2A	
D24	2A		K3	2A	
D25	2B		K4	1C	
D26	1D		K5	1C	
D27	1B				
D28	1B		LC1	2A	
D29	1A		LC2	2B	
D30	1D				
D31	2B				
D32	2A				
D41	2D				
D42	2D				
D43	2D				
D44	2D				
D45	2D				
D46	2D				
D47	2D				
D48	2C				
D49	2D				
D50	2D				
D51	2C				
D52	2D				
D53	2D				
D54	2C				
D55	2C				
D56	2C				
D57	2C				
D58	2C				
D59	2C				
D60	2C				
D61	2C				

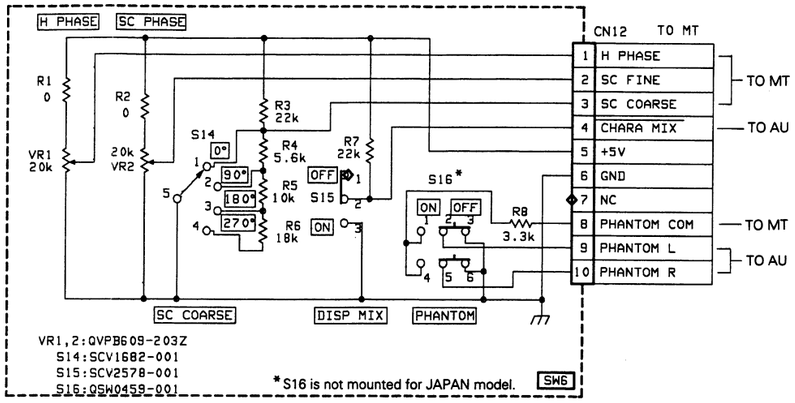
3-29

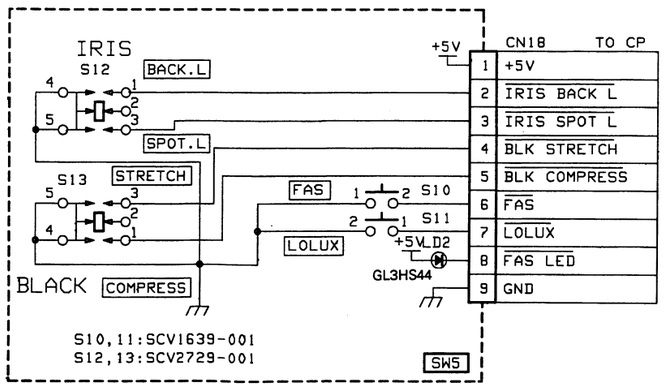
3.30 SW1/SW2/SW3/SW4/SW5/SW6/CN BOARD SCHEMATIC DIAGRAMS 14/15/16/17/18/19/20

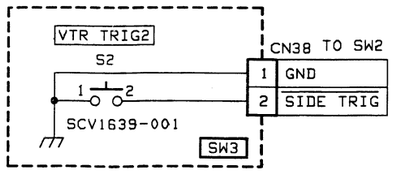


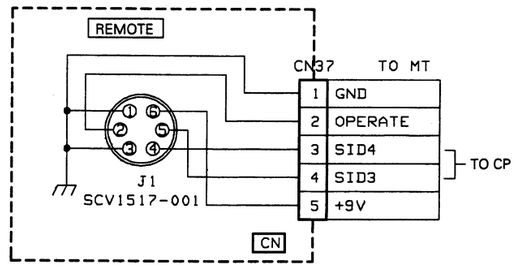








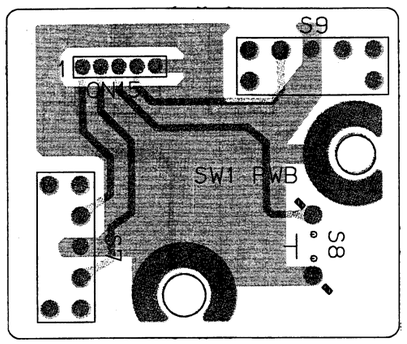




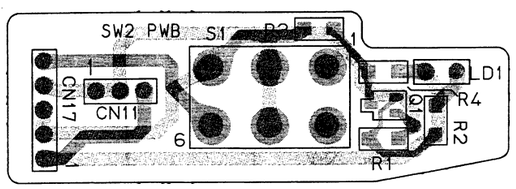
93425

3.31 SW1/SW2/SW3/SW4/SW5/SW6/CN CIRCUIT BOARDS

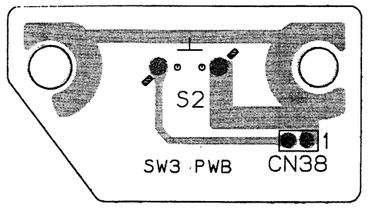
• **SW1 board**



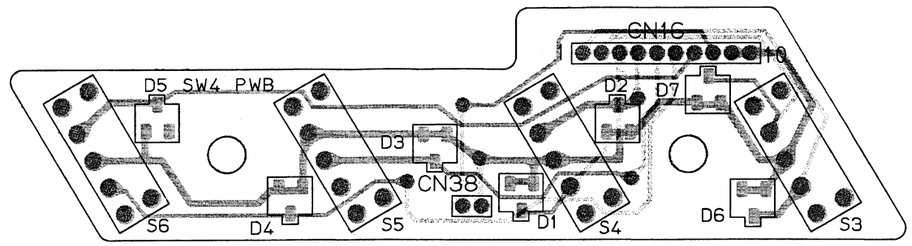
• **SW2 board**



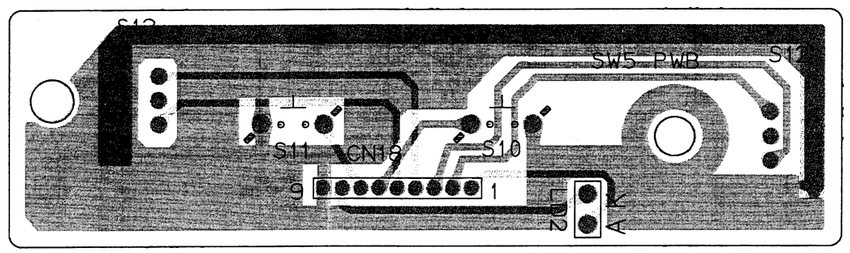
• **SW3 board**



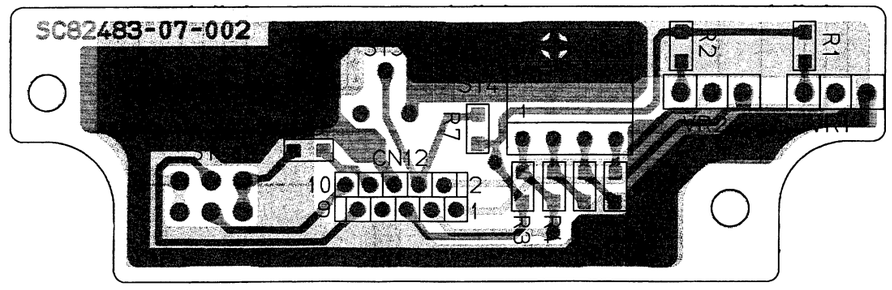
• **SW4 board**



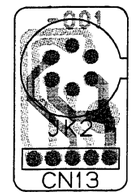
• **SW5 board**



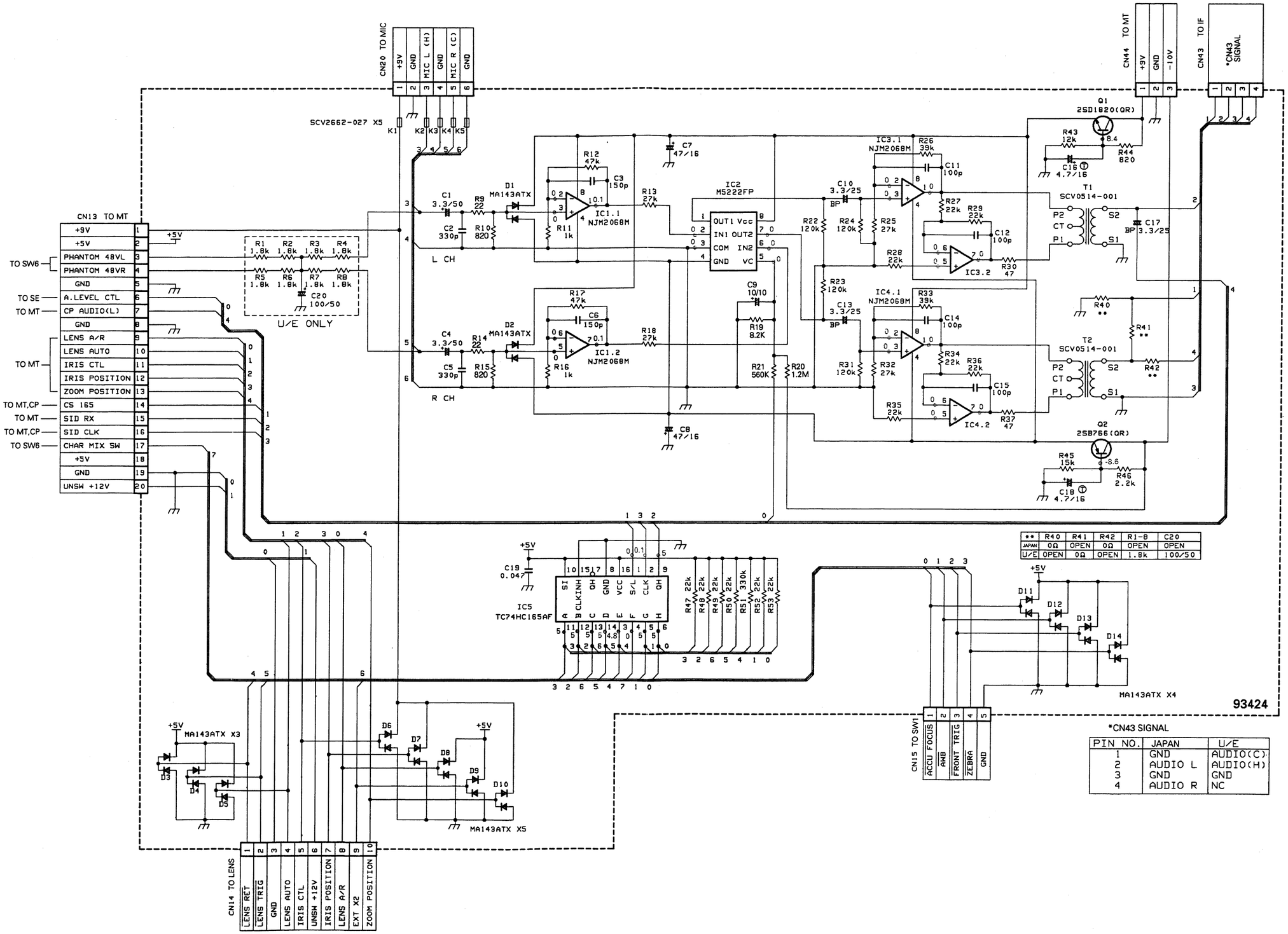
• **SW6 board**



• **CN board**



3.32 AU BOARD SCHEMATIC DIAGRAM 21



**	R40	R41	R42	R1-8	C20
JAPAN	0Ω	OPEN	0Ω	OPEN	OPEN
U/E	OPEN	0Ω	OPEN	1.8k	100/50

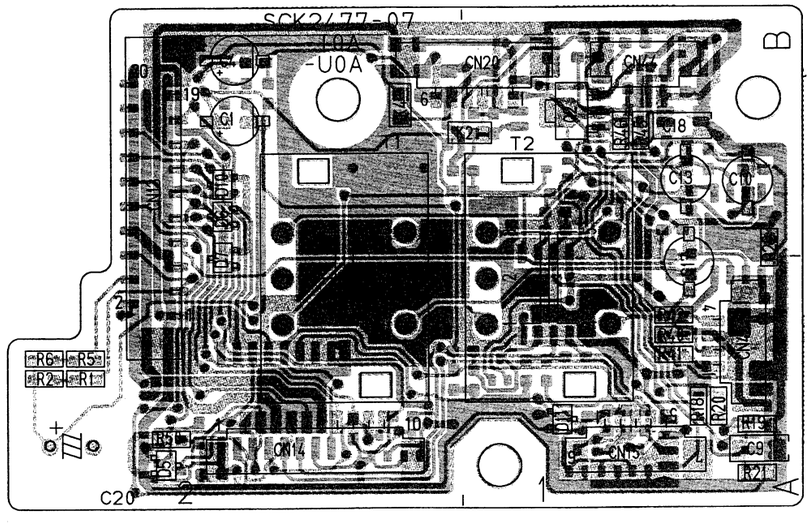
*CN43 SIGNAL

PIN NO.	JAPAN	U/E
1	GND	AUDIO(C)
2	AUDIO L	AUDIO(H)
3	GND	GND
4	AUDIO R	NC

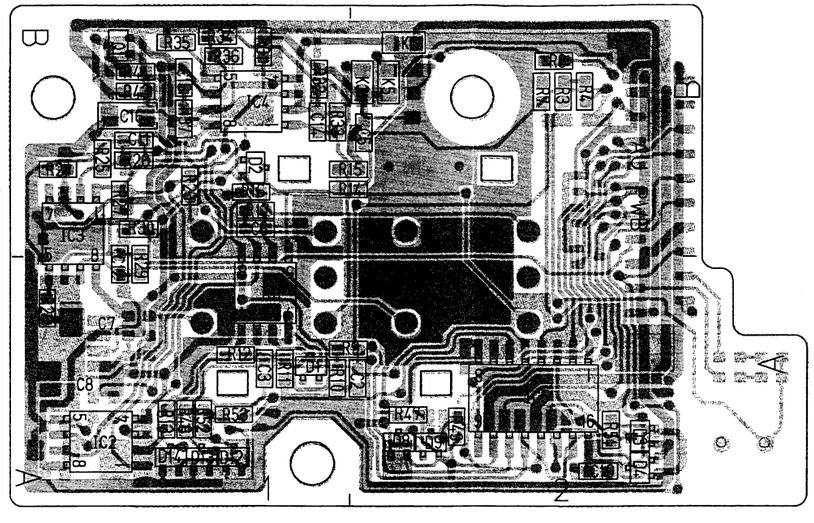
3-32

3.33 AU CIRCUIT BOARD

– Side A –

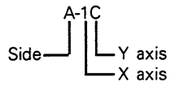


– Side B –



●ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.

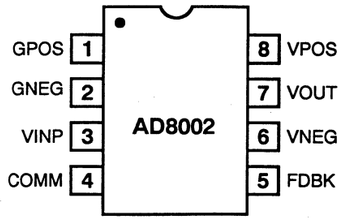


IC1	B- 1A	R21	A- 1A	C13	A- 1B
IC2	B- 1A	R22	A- 1B	C14	B- 1B
IC3	B- 1B	R23	B- 1B	C15	B- 1B
IC4	B- 1B	R24	B- 1B	C16	B- 1B
IC5	B- 2A	R25	B- 1B	C17	A- 1A
		R26	B- 1B	C18	A- 1B
Q1	B- 1B	R27	B- 1B	C19	B- 2A
Q2	A- 1B	R28	B- 1A	C20	A- 2A
		R29	B- 1A		
D1	B- 1A	R30	B- 1B	CN13	A- 2B
D2	B- 1B	R31	B- 1B	CN14	A- 2A
D3	B- 2A	R32	B- 1B	CN15	A- 1A
D4	B- 2A	R33	B- 1B	CN20	A- 1B
D5	A- 2A	R34	B- 1B	CN43	A- 1A
D6	A- 2B	R35	B- 1B	CN44	A- 1B
D7	A- 2A	R36	B- 1B		
D8	B- 1A	R37	B- 1B	K1	B- 2B
D9	B- 2A	R40	A- 1A	K2	A- 1B
D10	A- 2B	R41	A- 1A	K3	B- 1B
D11	A- 1A	R42	A- 1A	K4	A- 2B
D12	B- 1A	R43	B- 1B	K5	B- 1B
D13	B- 1A	R44	B- 1B		
D14	B- 1A	R45	A- 1B	T1	A- 2A
		R46	A- 1B	T2	A- 1A
R1	A- 2A	R47	B- 2A		
R2	A- 2A	R48	B- 1A		
R3	B- 2B	R49	B- 2A		
R4	B- 2B	R50	A- 2A		
R5	A- 2A	R51	B- 2A		
R6	A- 2A	R52	B- 1A		
R7	B- 2B	R53	B- 1A		
R8	B- 2B				
R9	B- 1A	C1	A- 2B		
R10	B- 1A	C2	B- 1A		
R11	B- 1A	C3	B- 1A		
R12	B- 1A	C4	A- 2B		
R13	B- 1A	C5	B- 1B		
R14	B- 1B	C6	B- 1B		
R15	B- 1B	C7	B- 1A		
R16	B- 1B	C8	B- 1A		
R17	B- 1B	C9	A- 1A		
R18	A- 1A	C10	A- 1B		
R19	A- 1A	C11	B- 1B		
R20	A- 1A	C12	B- 1A		

3-33

3.34 BLOCK DIAGRAM OF IC's

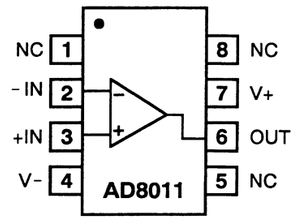
■ AD603AR-X 【ANALOG DEVICES】
(Variable Gain CTL Amplifier)



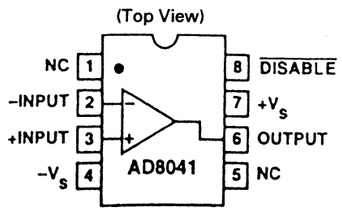
■ Pin funoction

Pin No.	Pin Name
1	GPOS Gain CTL Input " HI "
2	GNEG Gain CTL Input " LOW "
3	VINP Amp. Input
4	COMM GND
5	FDBK Feedback
6	VNEG Vss
7	VOUT Output
8	VPOS V_{DD}

■ AD8011AR-X 【ANALOG DEVICES】
(Current Feedback Amplifier)

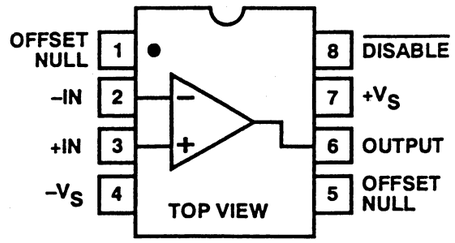


■ AD8041AR-XE 【ANALOG DEVICES】
(Op.Amplifier)

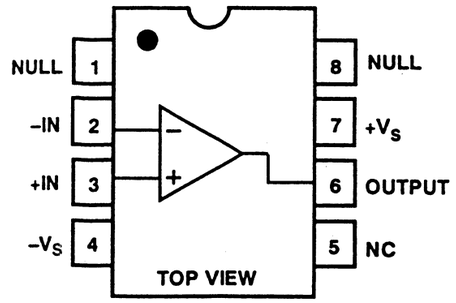


NC=Not connected

■ AD810AR-X 【ANALOG DEVICES】
(Hi-Speed Low Power Op.Amp)

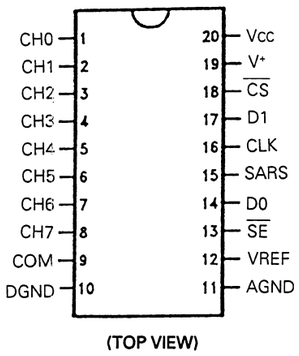


■ AD817AR-X 【ANALOG DEVICES】
(Hi-Speed Low Power Op.Amp)

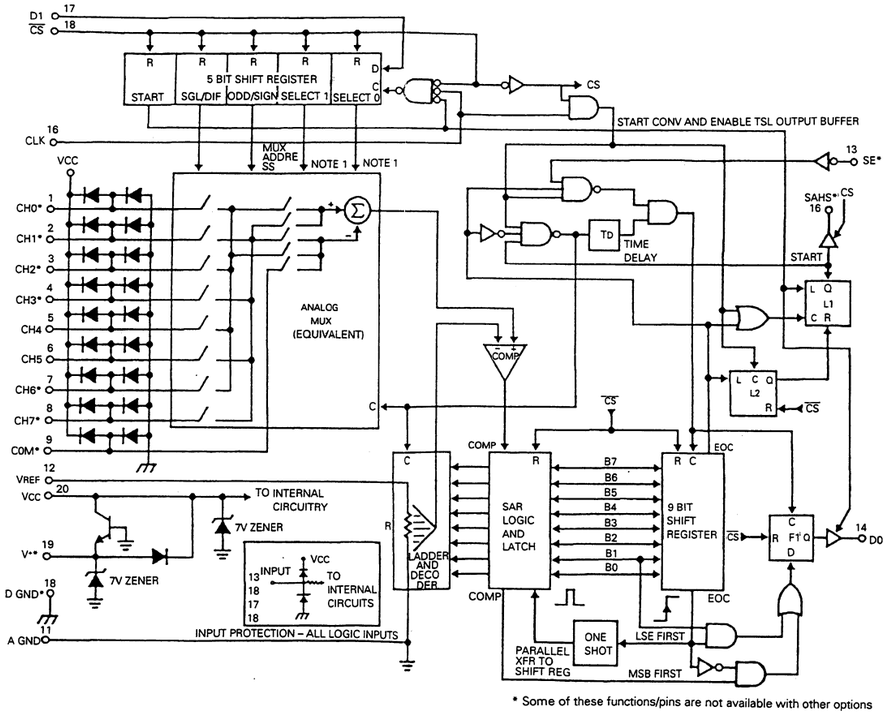


NC = NO CONNECT

■ ADC0838CCWM-X
【NATIONAL SEMI CONDUCTOR】
(8 Bit Serial I/O A/D Converters with Multiplexer Options)

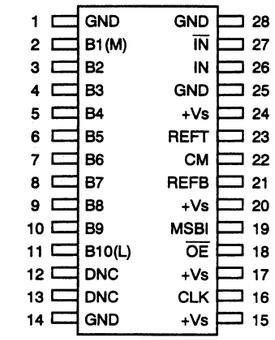


(TOP VIEW)



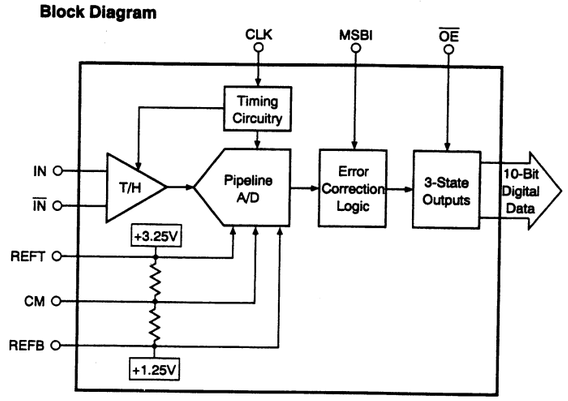
* Some of these functions/pins are not available with other options

■ ADS820U-X 【BBJ】
(A/D Converter)



(Top View)

Block Diagram



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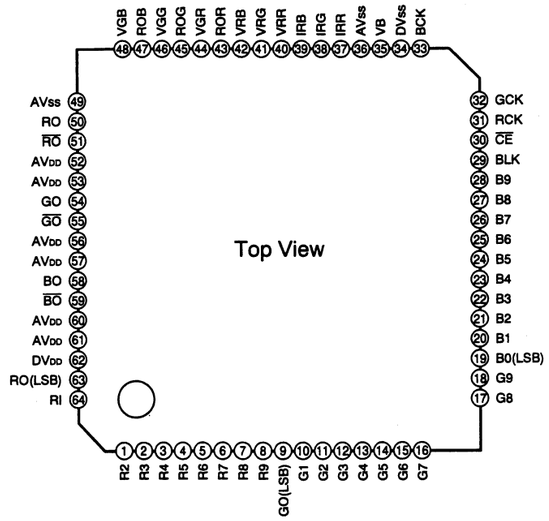
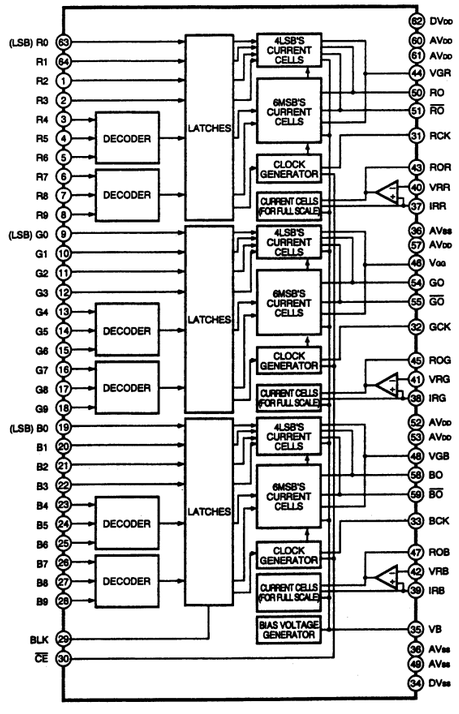
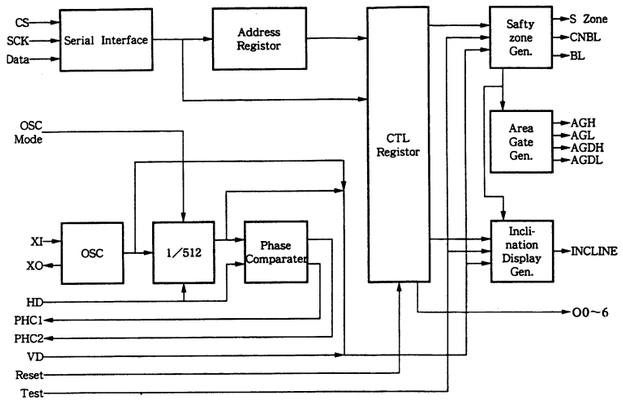
■ CXD2307R-X 【SONY】
(10 Bit 50MSPS RGB 3 Channel D/A Converter)



Block Diagram



■ JCS0005 【JVC】
(Area Gate Generator)



● **Pin function of JCS0005**

All input terminals are internally pulled up.

Pin No.	Symbol	I/O	Function
1	$\overline{CS}$	I	Chip select terminal of serial input/output.
3	SCK	I	Write-in clock for serial input/output. Data is read at rise of SCK.
5	DATA	I	Serial data input. To start with LSB.
6	VSS	—	GND (power)
7	OSC MODE	I	H : To use internal oscillator. L : To use external clock.
8	PHC1	O	Phase comparison output of internal PLL. Output level is low when clock is ahead of HD in the phase while it is high when clock is behind HD in the phase. In other period clock has high impedance.
9	$\overline{PHC2}$	O	Phase comparison output of internal PLL. Output level is high when clock is ahead of HD in the phase while it is low when clock is behind HD in the phase. In other period clock has high impedance.
11	XI	O	Oscillator input. When external clock is used, it is input to this terminal. External clock must be synchronous with HD. A feedback resistor is built in between XI and XO.
12	XO	O	Oscillator output.
14	$\overline{O6}$	O	General output 6
16	$\overline{VD}$	I	Vertical sync. signal input (negative)
17	$\overline{HD}$	I	Horizontal sync. signal input (negative)
18	VSS	—	GND (power)
19	VDD	—	+5 V power supply
20	$\overline{RESET}$	I	Reset input. Low level input (for more than 1 µsec at least) at power on inhibits output of AGDL, AGDH, SZONE, INCLINE and turns levels of general outputs $\overline{O0}$ to $\overline{O6}$ to low.
21	$\overline{TEST}$	I	To be used for IC inspection. For use, turn to open or connect with VDD.
22	SZONE	O	Safety zone indication output
23	INCLINE	O	Inclination angle indication output
24	$\overline{CNBL}$	O	Blanking output for cinema mode
25	AGDL	O	To output area gate in combination 2 bits of AGDL and AGDH. Output can be turned on/off by setting of internal register.
27	AGDH	O	

	AGDL	AGDH
Area gate 0 period (blanking period)	O	O
Area gate 1 period	O	I
Area gate 2 period	I	O
Area gate 3 period	I	I

Pin No.	Symbol	I/O	Function
30	$\overline{O0}$	O	General output 0
31	VSS	—	GND
33	$\overline{O1}$	O	General output 1
35	$\overline{O2}$	O	General output 2
37	$\overline{O3}$	O	General output 3
39	$\overline{O4}$	O	General output 4
42	VSS	—	GND (power)
43	VDD	—	+5 V power supply
44	$\overline{O5}$	O	General output 5
45	AG4	O	H output in area gate 4 period, L output in other period. Blanking is applied by internal BL signal.
46	AGL	O	To output area gate in combination of 2 bits of AGL and AGH.
47	AGH	O	

	AGDL	AGDH
Area gate 0 period (blanking period)	O	O
Area gate 1 period	O	I
Area gate 2 period	I	O
Area gate 3 period	I	I

Pin No.	Symbol	I/O	Function
48	BL	O	H output in blanking period, L output in other period.

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■ HM63021FP-S 【HITACHI】
(2,048 word x 8 bit C-MOS S-RAM)

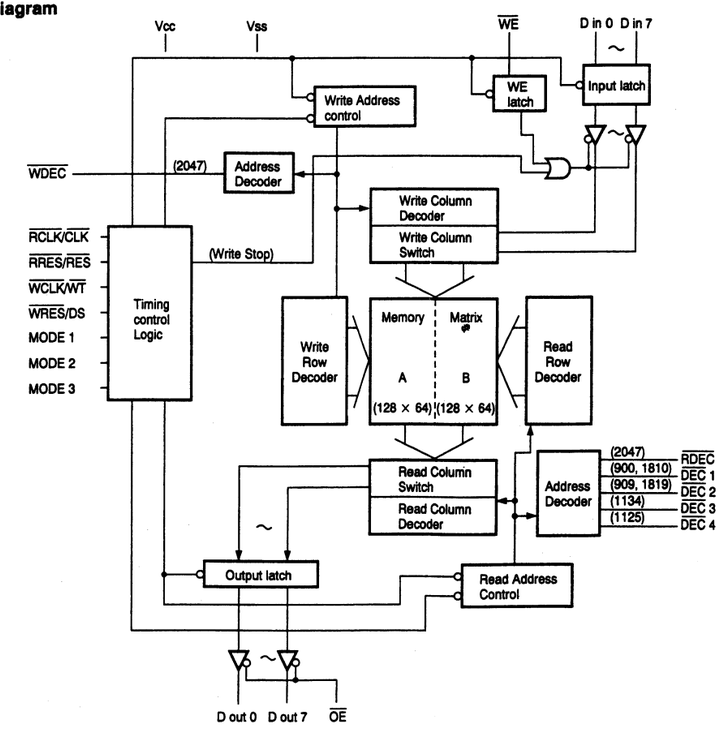
Delay line	1H/2H	TBC	Variable Speed Conversion	Time Compress and Expand	Mode		Time Compress and Expand	Variable Speed Conversion	TBC	1H/2H	Delay line
				Mode 1	1		28 Vcc				
$\overline{CLK}$				$\overline{RCLK}$	2	Read Control	27 Mode 2				
$\overline{RES}$				$\overline{RRES}$	3		26 Mode 3		$\overline{RDEC}$	$\overline{DEC\ 2}$	
				D in 0	4		25 $\overline{OE}$				
				D in 1	5		24 D out 0				
				D in 2	6		23 D out 1				
				D in 3	7	INPUT	22 D out 2				
				D in 4	8		21 D out 3				
				D in 5	9	OUTPUT	20 D out 4				
				D in 6	10		19 D out 5				
				D in 7	11		18 D out 6				
				$\overline{WE}$	12		17 D out 7				
$\overline{DEC\ 1}$	$\overline{WDEC}$			High Z	13	Write Control	16 $\overline{WRES}$		DS	$\overline{DEC\ 3}$	
				Vss	14		15 $\overline{WCLK}$		$\overline{WT}$	$\overline{DEC\ 4}$	

Mode Pin Settings

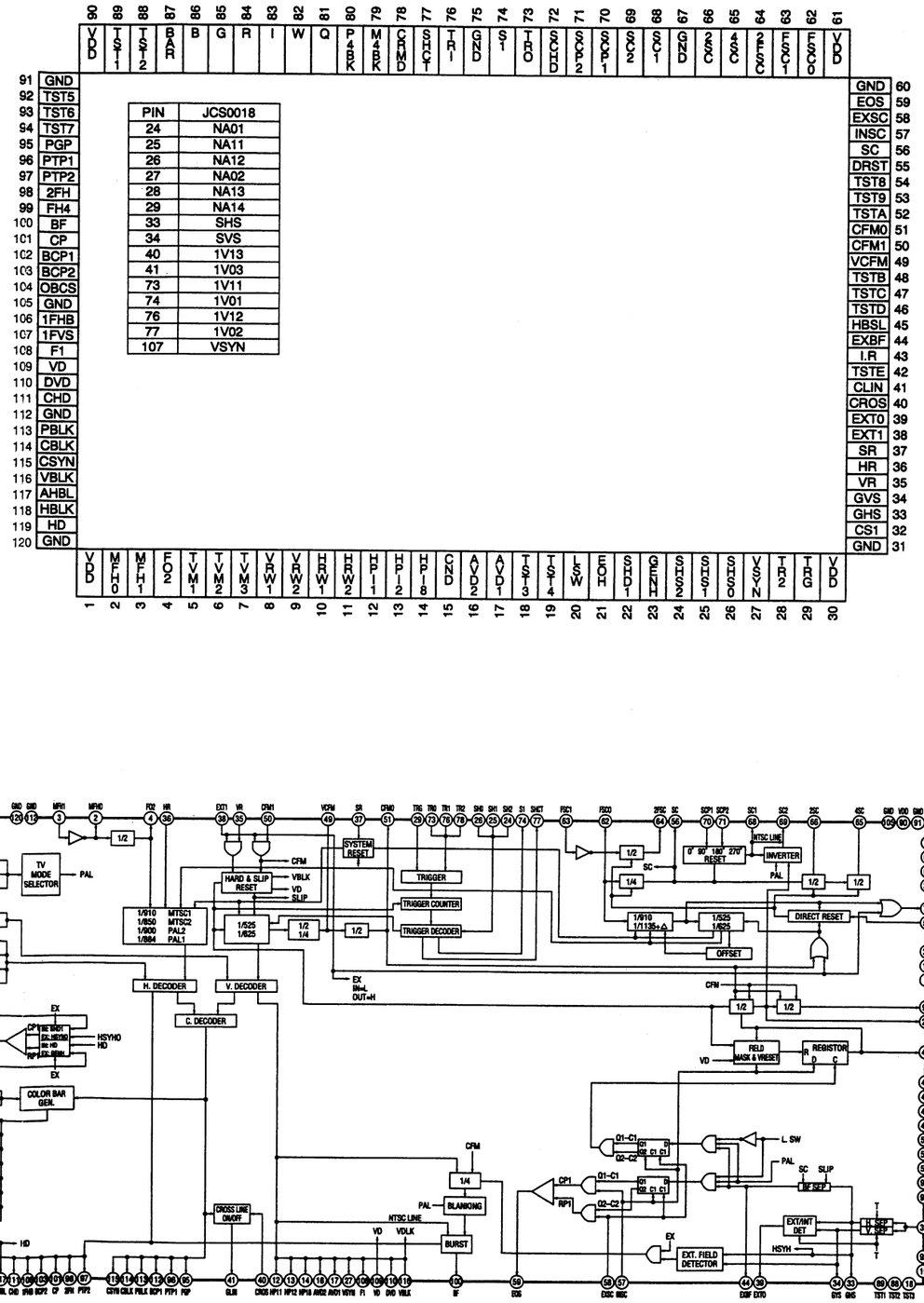
Mode Signal			Function
Mode 1	Mode 2	Mode 3	
H	H	H	Time Compress and Expand Mode
H	H	L	Variable Speed Conversion Mode
H	L	—*	TBC mode
L	H	—*	1H/2H Delay mode
L	L	—*	Delay Line mode

NOTE: * DEC Output Signal (RDEC, DEC 2)

Block Diagram

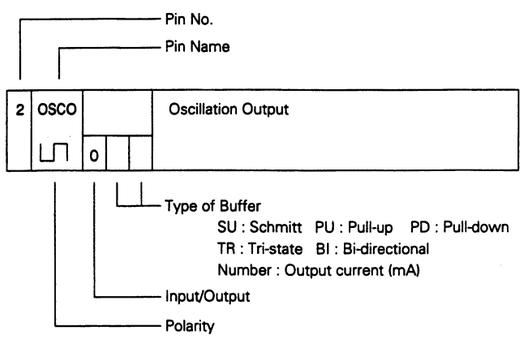


■ JCS0027 【JVC】
(SSG)



3-36

Terminal Specifications of JCS0023 (4th Revision)



Pin No.	Pin Name	Function
1	VDD	+5 Power supply
2	MFHO	Synchronizing oscillation output Output terminal for built-in oscillator O
3	MFHI	Synchronizing oscillation input Input terminal for built-in oscillator I
4	F02	1/2 divided output 1/2 divided output of synchronizing oscillator O 9
5	TVM1	TV mode 1 I PU
6	TVM2	TV mode 2 I PU
7	TVM3	TV mode 3 I PU
8	VBW1	V. blanking control 1 I PU
9	VBW2	V. blanking control 2 I PU
10	HBW1	H. blanking control 1 I PU
11	HBW2	H. blanking control 2 I PU

	NTSC1 1820FH	NTSC2 1716FH	PAL2 1816FH	PAL1 1728FH	PALM 1716FH	SECAM 1716FH
TVM1	L	H	L	H	L	H
TVM2	L	L	H	H	L	L
TVM3	L	L	L	L	H	H

VBW1	L	H	L	H
VBW2	L	L	H	H
NTSC1	21H	20H	19H	18H
NTSC 2	21H	20H	19H	18H
PAL1	26H	25H	24H	23H
PAL2	26H	25H	24H	23H
PALM	21H	20H	19H	18H
SECAM	26H	25H	24H	23H

HBW1	L	H	L	H
HBW2	L	L	H	H
NTSC1	157T	156T	154T	152T
NTSC2	143T	147T	146T	152T
PAL1	162T	159T	156T	153T
PAL2	170T	167T	164T	161T
PALM	148T	147T	146T	144T
SECAM	162T	159T	156T	153T

Pin No.	Pin Name	Function
12	HP11	H. pulse 11 H. pulse to be active at 11H, 13H, 15H and 17H. O 9
13	HP12	H. pulse 12 H. pulse to be active at 12H and 14H. O 9
14	HP18	H. pulse 18 H. pulse to be active at 18H. O 9
15	GND	Ground
16	AVD2	Pre-vertical drive pulse 2 Vertical drive pulse whose phase is 8H ahead of VD pulse. Functions as subcarrier blanking for SECAM system. O 9
17	AVD1	Pre-vertical drive pulse 1 Vertical drive pulse whose phase is 1H ahead of VD pulse. O 9
18	TST3	Test terminal 3 Set this terminal open in general. I PU
19	TST4	Test terminal 4 Set this terminal open in general. I PU
20	LSW	Line switch Half-divided FH output. Switches color difference signal of neighboring lines by 180° in phase for PAL system. O 9
21	EOH	H. synchronizing digital phase comparison output As compared with leading edge of SHDI; when internal HD has advanced phase: Low level, when internal HD has lagged phase: High level, when internal HD is in-phase: High impedance. O TR 13
22	SHDI	H. synchronizing digital phase comparison input (trailing detection) Input of horizontal drive signal originating from subcarrier. Active when EXTI is low level. When this is inactive, GHS (No. 33) is internally connected. I SH PU
23	GENH	H. synchronizing digital phase comparison input (trailing detection) Input for external synchronization, horizontal synchronization and phase adjustment. Active when EXTI is high level. When this is inactive, HD (No. 119) is internally connected. I SH PU

Pin No.	Pin Name	Function
24	SHS2	Shutter speed setting 2 Random shutter setting function (Refer to the specifications.) I PU
25	SHS1	Shutter speed setting 1 Random shutter setting function (Refer to the specifications.) I PU
26	SHS0	Shutter speed setting 0 Random shutter setting function (Refer to the specifications.) I PU
27	VSYN	V. sync. output Vertical synchronizing signal of V. EQ pulse width. O 9
28	TR2	Sync. reset mode setting For sync. reset mode setting when random shutter setting functions is activated. I PU
29	TRG	Trigger input Trigger input to activate random shutter setting function. (Refer to the random shutter specifications.) I PU
30	VDD	+5V power supply
31	GND	Ground
32	CSI	Ext. composite sync. signal input To input external composite synchronizing signal for horizontal and vertical separation and ext. sync. signal input detection. I SH PU
33	GHS	Horizontal separate sync. Horizontal separate signal of external composite synchronizing signal. 1/2 equivalent pulse is not included. O 9
34	GVS	Vertical separate sync. Vertical separate signal of external composite synchronizing signal. 1/2 equivalent pulse is not included. O 9

SHS2	SHS1	SHS0	Shutter speed NTSC	Shutter speed PAL
L	L	L	1/60	1/50
L	L	H	1/100	1/120
L	H	L	1/250	
L	H	H	1/500	
H	L	L	1/1000	
H	L	H	1/2000	
H	H	L	1/4000	
H	H	H	1/10000	

Pin No.	Pin Name	Function
35	VR	Vertical reset External synchronizing input by slip system. If this system is input in vertical sync. period, hard reset is activated. Input in other period stops internal counter for a period of pulse width. I PU
36	HR	Horizontal reset Presets horizontal component 1T before rise of HD. Jitters in a period shorter than 140 ns are absorbed. However, operation is not secured for continuous input. I PU
37	SR	System reset Inside of IC is forcibly initialized regardless of internal or external synchronization. VR and HR inputs are ineffective. Jitters in a period shorter than 140 ns are absorbed. I PU
38	EXTI	Internal/External synchronization setting input L : Internal synchronization H : External synchronization I PD
39	EXTO	Internal/External synchronization setting output L: Without CSI input After detection of no SHS, another SHS is not detected for a period of 8 fields. H: With CSI input After detection of SHS, 200 or more SHS's are detected in 1 vertical period. O 9
40	CROS	Cross ON/OFF input L: To stop cross output H: To activate cross output operation For detail, refer to supplementary specifications of respective terminals. I PD
41	CLIN	Cross output To output a cross in the center of screen. For detail, refer to supplementary specifications of respective terminals. O 9
42	TSTE	Test terminal E Set this terminal open in general. I PU
43	LR	Line reset When EXTI is external synchronization (High level), setting signal is supplied to LSW. When internal burst is ahead of external burst in phase, High level is output. When internal burst is behind external burst in phase, Low level is output (for 6 clocks of SC). Phase comparison is not operated for one field after output. For detail, refer to supplementary specifications of respective terminals. O 9

3-37

Pin No.	Pin Name	Function
44	EXBF	Brust flag separate output With detection of one or more H. sync pulse from CSI input, pulse whose width is for 6 cycles of subcarrier is output. For details, refer to supplementary specifications of respective terminals. O 9
45	HBSL	H. blanking reset To switch output position of IFHB (106). L: System delay 900 ns approx. H: System delay 450 ns approx. I PU
46	TSTD	Test terminal D Set this terminal open in general. BI PU 9
47	TSTC	Test terminal C Set this terminal open in general. BI PU 9
48	TSTB	Test terminal B Set this terminal open in general. I PU
49	VCFM	VTR color frame Color frame for VTR exclusively. 2-field period for NTSC1, NTSC2 and PAL. 4-field period for PAL1, PAL2 and SECAM. O 9
50	CFMI	Color frame input Effective with EXTI being low level. Used for color frame control in external synchronization. Reset to synchronizing circuit by the slip system. I SH PU
51	CFMO	Color frame output Pulse output at the beginning of every color frame. 4-field period for NTSC1 and NTSC2. 8-field period for PAL1, PAL2, PALM and SECAM. O 9
52	TSTA	Test terminal A Set this terminal open in general. I PU
53	TST9	Test terminal 9 Set this terminal open in general. I PU

Pin No.	Pin Name	Function
54	TST8	Test terminal 8 Set this terminal open in general. I PU
55	DRST	Direct reset terminal When EXTI is low level, the following operations are realized. To switch reset operation of horizontal counter for subcarrier. To reset color frame synchronizing with horizontal counter with High level; To reset color frame with Low level. I PU
56	SC	Subcarrier output To monitor subcarrier signal connected internally with digital phase comparator. When phase of SC1 (68) is 0°, this output is inphase. O 9
57	INSC	Internal subcarrier input Shall be connected with SC (56). Effective when EXBF is low level. Pulse rise is detected. I
58	EXSC	External subcarrier input Effective when EXBF is low level. Pulse rise is detected. I
59	EOS	Digital phase comparison output for subcarrier As compared with leading edge of EXSC; when internal SC has advanced phase : Low level, when internal SC has lagged phase : High level, when internal SC is in phase : High impedance. O TR 13
60	GND	Ground
61	VDD	+5V power supply
62	FSCO	Oscillator output for subcarrier O
63	FSCI	Oscillator input for subcarrier I
64	2FSC	Double subcarrier output Half-divided oscillator output for subcarrier O 13

Pin No.	Pin Name	Function
65	4SC	1/4 subcarrier output 1/4-divided output of subcarrier frequency O 9
66	2SC	1/2 subcarrier output 1/2-divided output of subcarrier frequency O 9
67	GND	Ground
68	SC1	Subcarrier 1 Subcarrier frequency output. Phase is changed by SCP1 and SCP2. In PAL mode, phase is not changed every H. O 9
69	SC2	Subcarrier 2 Subcarrier frequency output whose phase is 90° ahead of SC1. Phase is changed by SCP1 and SCP2. In PAL mode, phase is inverted by 180° every H. O 9
70	SCP1	Subcarrier select 1 Note: SC2 is expressed based on SC1. I PD
71	SCP1	Subcarrier select 2 I PD
72	SCHD	Subcarrier horizontal driver Horizontal drive pulse originating from subcarrier frequency. O 13
73	TR0	Random shutter control system setting input To set random shutter control system. L: 8-stage default control, H: Pulse width continuous control (Refer to the specifications of random shutter setting function.) I PD
74	SI	Stroboscope index output In normal operation, this output is for stroboscopic lamp emitting time. In random shutter operation, this output is for video output time. (Refer to the specifications of random shutter setting function.) O 9

SCP2	SCP1	SC1	SC2
L	L	0°	90° ahead (270°)
L	H	90°	90° ahead (0°)
H	L	180°	90° ahead (90°)
H	H	270°	90° ahead (180°)

Pin No.	Pin Name	Function
75	GND	Ground
76	TR1	Random reset system setting input To determine reset system setting system. L: SYNC reset system, H: SYNC non-reset system. (Refer to the specifications of random shutter setting function.) I PD
77	SHCT	Shutter control output Electronic shutter control signal. Shall be connected to SHCT (19) of TG (μPD9438GK). (Refer to the specifications of random shutter setting function.) O 9
78	CBMD	SMPTE/FULL To switch color bar signal to SMPTE or FULL. L: Full Field mode H: SMPTE mode — Effective only with BAR signal of low level. I PU
79	M4BK	Color bar signal o 9
80	P4BK	Color bar signal o 9
81	Q	Color bar signal o 9
82	W	Color bar signal o 9
83	I	Color bar signal o 9

	BAR	CBMD	I	W
NTSC1 NTSC2	H L L	X H L	L Effective L	L Effective (75%W) L
PAL1 PAL2	H L L	X H L	L Effective L	L Effective (75%W) Effective (100W)
PALM	H L L	X H L	L Effective L	L Effective (75%W) Effective (100W)
SECAM	H L L	X H L	L Effective L	L Effective (75%W) L

	Q	P4BK	M4BK
NTSC1 NTSC2	L Effective L	L Effective L	L Effective L
PAL1 PAL2	L Effective L	L Effective L	L Effective L
PALM	L Effective L	L Effective L	L Effective L
SECAM	L Effective L	L Effective L	L Effective L

3-38

Pin No.	Pin Name	Function
84	–R	Color bar signal 0 9
85	G	Color bar signal 0 9
86	B	Color bar signal 0 9

	BAR	C3MD	B	G	R
NTSC1 NTSC2	H L	X X	L Effective	L Effective	L Effective
PAL1 PAL2	H L	X X	L Effective	L Effective	L Effective
PALM	H L	X X	L Effective	L Effective	L Effective
SECAM	H L	X X	L Effective	L Effective	L Effective

Pin No.	Pin Name	Function
87	BAR	Color bar control (ON/OFF) I PU

BAR	R, G, B, I, Q, W, P4BK, M4BK
L	Effective
H	Fixed at Low level

Pin No.	Pin Name	Function
88	TST2	Test terminal 2 Set this terminal open in general. I PU
89	TST1	Test terminal 1 Set this terminal open in general. I PU
90	VDD	+5V power supply
91	GND	Ground
92	TST5	Test terminal 5 Set this terminal open in general. I PU
93	TST6	Test terminal 6 Set this terminal open in general. I PU
94	TST7	Test terminal 7 Set this terminal open in general. 0 9
95	PGP	Pilot gate pulse Uniform voltage level of two signals, one passes the 1FH delay line and the other does not pass the 1H line, with each other in order to compensate attenuation caused by the delay line. 0 9
96	PTP1	Pilot pulse 1 Uniform voltage level of two signals, one passes the 1H delay line and the other does not pass the 1H line, with each other in order to compensate attenuation caused by the delay line. 0 9
97	PTP2	Pilot pulse 2 Used to control video level. 0 9
98	2FH	Double FH 0 9

NTSC1	NTSC2	PAL1	PAL2	PALM	SECAM
31.468	31.468	31.25	31.25	31,468	31.25

Pin No.	Pin Name	Function
99	FH4	1/4FH Half-divided output of LSW. Equivalent to 25 Hz in PAL mode. 0 9
100	BF	Burst flag Regulates period to insert subcarrier into back porch of horizontal sync. signal. Functions to switch chromaticity signal for every line in SECAM mode. 0 9
101	CP	Clamp pulse Signal to clamp reference voltage of black level. 0 9
102	BCP1	Black clamp pulse 1 Fixes black level of CCD output signal. 0 9
103	BCP2	Black clamp pulse 2 Fixes black level of CCD output signal (at every H output). 0 9
104	OBCS	Optical black pulse select Switching of output position of horizontal BCP1 and BCP2. L: Frontward output H: Backward output I PU
105	GND	Ground
106	IFHB	Interface horizontal blanking Output pulse that is narrower than HBLK both in leading edge and trailing edge. 0 9
107	IFVS	Interface vertical synchronization Normal function: To output vertical synchronization signal having the same pulse width of V. EQ pulse. Random shutter setting function: To output the same signal as V. sync. signal in the fall time. 0 9
108	FI	Field index Field discrimination signal. L: Field that HD and VD fall at the same time. H: Field that there is a time lag of 0.5H in falling between HD and VD. 0 9
109	VD	Vertical drive pulse Pulse output at the beginning of every field. Used as the vertical timing standard for the set. 0 9
110	DVD	Delayed vertical drive pulse Vertical drive signal that lags behind VD pulse. Controls camera's scanning timing and regulates activation time of sawtooth waveform of vertical deflection circuit. 0 9
111	CHD	Delayed horizontal drive pulse Controls camera's scanning timing. Regulates activation time of sawtooth waveform of horizontal deflection circuit. 0 9
112	GND	Ground
113	PBLK	Pre-blanking Composite blanking signal used for video processing. As compared with CBLK signal, this signal is narrower in the leading edge. 0 9
114	CBLK	Composite blanking Horizontal and vertical composite blanking signal. 0 9
115	CSYN	Composite sync. Composite synchronizing signal comprising of four signals of HSYN, VSYN, EQ and SAW. 0 9
116	VBLK	V. blanking Vertical blanking signal whose pulse width can be changed with VBW1 and VBW2. 0 9
117	AHBL	Pre-horizontal blanking Pulse that HBLK is advanced in breaking of leading edge. 0 9
118	HBLK	H. blanking Horizontal blanking pulse whose pulse width can be changed with HBW1 and HBW2. 0 9
119	HD	H. drive Pulse synchronized with beginning of respective lines. Used as horizontal timing standard of the set. 0 13
120	GND	Ground

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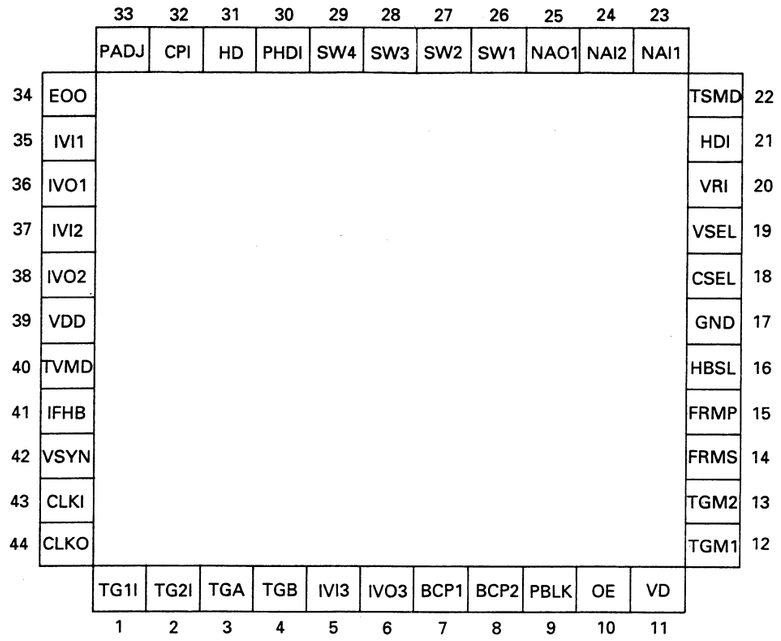
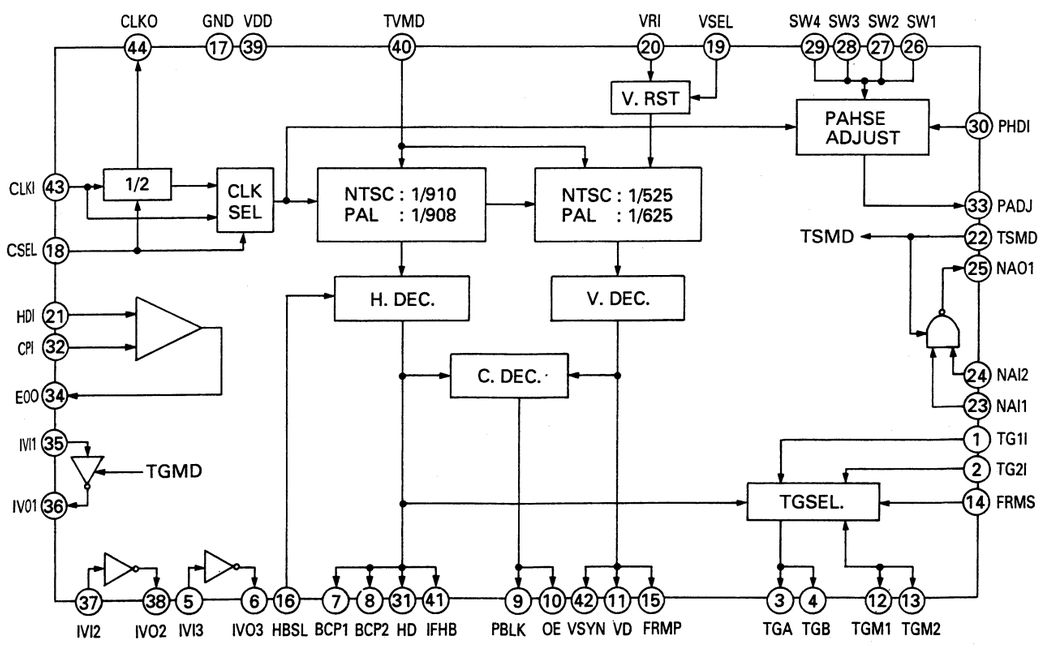
■ **JCS0028 【JVC】**
(H, V Timing Generator)

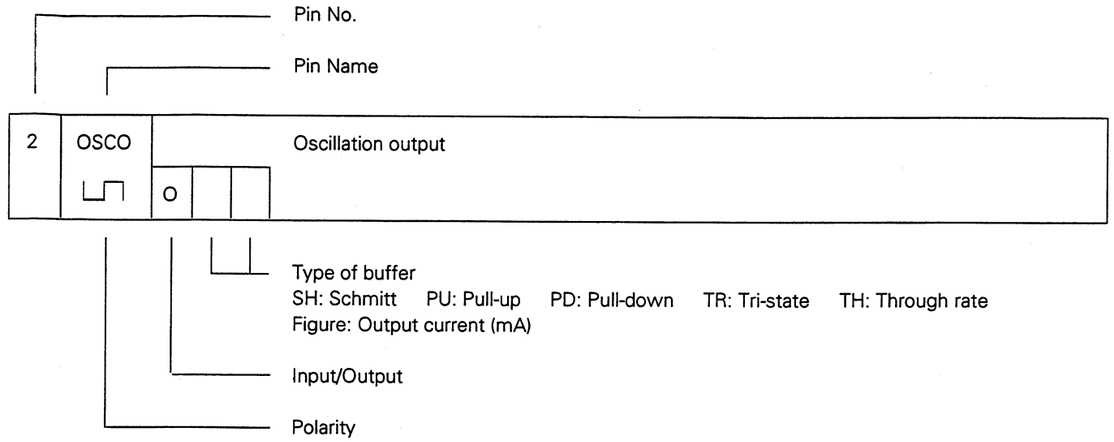
(Top View)



BLOCK DIAGRAM



PIN SPECIFICATIONS



No.	Symbol	Description
1	TG1 I	Transfer Gate 1 Input I Connect µPD9438AGK (11). If not used, do not change the level.
2	TG2 I	Transfer Gate 2 Input I Connect µPD9438AGK (12). If not used, do not change the level.
3	TGA	Transfer Gate A Output O 9 Electric charge transfer pulse output from TG1 I (1) for øV1A and øV3A use.
4	TGB	Transfer Gate B Output O 9 Electric charge transfer pulse output from TG2 I (2) for øV1B and øV3B use.
5	IVI3	Common Invert Input 3 I If not used, do not change level.
6	IVO3	Common Invert Output 3 O 9 The invert output of IVI3 (5).
7	BCP1	Black Clamp Pulse 1 O 9 Fixing the black level of CCD output signal. But, outputting per H.
8	BCP2	Black Clamp Pulse 2 O 9 Fixing the black level of CCD output signal. But, outputting per H.

No.	Symbol	Description
9	PBLK	Preblanking O 9 Used in process of picture treatment to blank the compound flying-back lines. This PBLK has a shape of narrow fore edge compared with CBLK.
10	OE	ODD-EVEN O 9 The signal to distinguish the ODD and EVEN. L: ODD field, H: EVEN field
11	VD	Vertical Drive O 9 The vertical REF. timing, which is included in the pulse set, output ahead of each field.
12	TGM1	Read Out Mode 1 I PD When both of TGM1 (12) and TGM2 (13) are used, it is possible to set the READ OUT MODE.
13	TGM2	Read Out Mode 2 I PD
14	FRMS	Frame Select I PD A/B frame switching terminal for 1 pixel read-out. L: A frame (TG3B, TG3A output only) H: B frame (TG1B, TG1A output only)
15	FRMP	Frame Pulse O 9 One cycle of 4 fields output pulse. When connecting to FRMS (14), A/B frame is capable of being selected automatically.
16	HBSL	Interface Horizontal Blanking Select I PU Position switching of IFHB (41). L: System delay 900 ns approx. H: System delay 450 ns approx.
17	GND	Grounding
18	CSEL	Clock Select I PD It is used to select the frequency of input clock. L: 14.318 MHz (NTSC), 14.187 MHz (PAL), H: 28.636 MHz (NTSC), 28.37 MHz (PAL)
19	VSEL	VD/V SYNC Select I PD It is used to select signals that are input to VRI (20). L: VSYNC signal input, H: VD signal input (PBLK ends before 3H.)
20	VRI	EXT. Vertical SYNC Input I SH VSYNC/VD signals are selected according to VSEL (19). Depending on the input, the other IC and vertical SYNC may be taken off.
21	HDI (RPI)	EXT. Horizontal SYNC Input (Ref. input for digital phase comparator) I SH Depending on the input of HD signal, the horizontal SYNC may be taken off. (To detect when the input signal goes off.)
22	TSMD	Test Mode Switching I PO Normally set to open. L: Normal operation H: Common NAND (23-25) and common invert (35 and 36) become test terminals.

TGM2	TGM1	Read Out Mode Set
L	L	4 pixels read-out (field)
L	H	3 pixels read-out
H	L	2 pixels read-out (frame)
H	H	1 pixel read-out

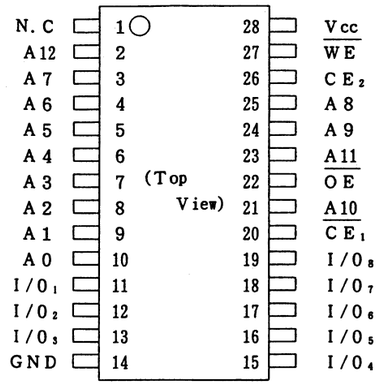
No.	Symbol	Description
23	NAI1	Common NAND Input 1 I If not used, fix the level.
24	NAI2	Common NAND Input 2 I If not used, fix the level.
25	NAO1	Common NAND Output 1 BI 9 The NAND outputs of NAI1 (20) and NAI2 (21).
26	SW1	Delay Set 1 I PD 1 step = 70 ns approx.
27	SW2	Delay Set 2 I PD
28	SW3	Delay Set 3 I PD
29	SW4	Delay Set 4 I PD
30	PHDI	Phase Adj. Input I To detect when the HD input for phase adj. circuit goes off. If not used, fix the level.
31	HD	Horizontal Drive O 13 The horizontal timing signal, which is included in the pulse set, synchronized with start of each line, and the REF. signal used for SYNC.
32	CPI	Comparison Input for Digital Phase Comparator I SH To detect when the input signal goes off.
33	PADJ	Phase Adj. Output O 9 For outputting 2.3µS width delayed pulse the value of which is set by SW1~SW4 (26, 27, 28 and 29) after PHD1 (30) has gone off.
34	EOO	Digital Phase Comparison Output O TR 9 CPI's relation with RPI: Same phase: High impedance Leading phase: Low level Delayed phase: High level

Step	SW4	SW3	SW2	SW1	Count value
1	L	L	L	L	0
2	L	L	L	H	1
3	L	L	H	L	2
4	L	L	H	H	3
5	L	H	L	L	4
6	L	H	L	H	5
7	L	H	H	L	6
8	L	H	H	H	7
9	H	L	L	L	8
10	H	L	L	H	9
11	H	L	H	L	10
12	H	L	H	H	11
13	H	H	L	L	12
14	H	H	L	H	13
15	H	H	H	L	14
16	H	H	H	H	15

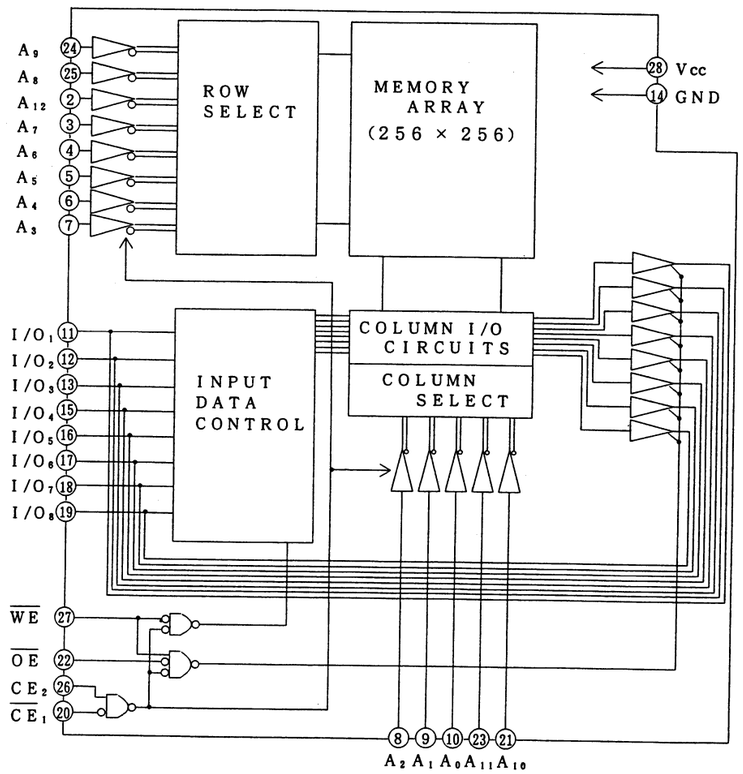
3-41

No.	Symbol	Description
35	IVI1 —	Common Invert Input 1 I If not used, fix the level.
36	IVO1 —	Common Invert Output 1 BI 9 Invert output of IVI1 (35).
37	IVI2 —	Common Invert Input 2 I If not used, fix the level.
38	IVO2 —	Common Invert Output 2 O 9 Invert output of IVI1 (37).
39	VDD	+5V Power Supply
40	TVMD —	TV Mode Switching I PD Switching of NTSC and PAL L: NTSC mode, H: PAL mode
41	IFHB	Interface Horizontal Blanking O 9 The pulse output with narrow leading and later edges compared with HCBLK. The position of output changes depending on HBSL (16).
42	VSYN	Vertical SYNC. O 9 The vertical SYNC output in the period of vertical EQ pulse.
43	CLKI	Clock Input I 28 MHz, 14 MHz clock input can be selected by CSEL (15).
44	CLKO	Clock Output O 9 When 28 MHz is input to CLKI (43), half-divided frequency is output. When 14 MHz is input to CLKI (43), 14 MHz is output.

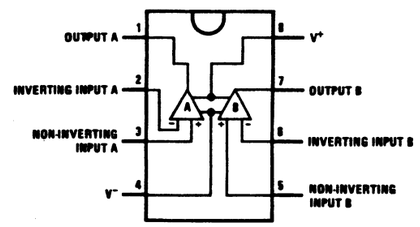
■ LH5168N-10L 【SHARP】 (64K SRAM)



Name	Signal
$A_0 \sim A_{12}$	Address Input
$\overline{CE_1}/CE_2$	Chip Enable
$\overline{WE}$	Write Enable
$\overline{OE}$	OUTPUT
$I/O_1 \sim I/O_8$	Data I/O
N.C.	Non Connection

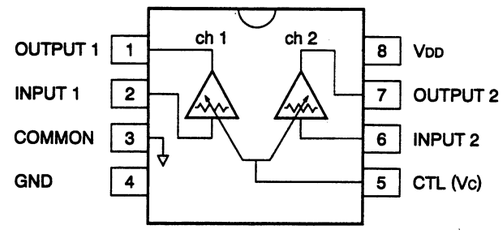


■ LMC6082IM-X 【National Semiconductor】 (Precision CMOS Dual Op.Amp)



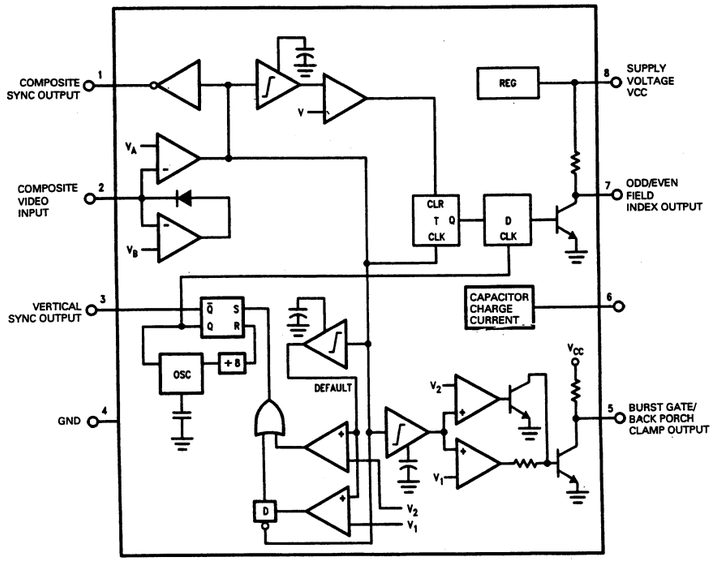
Top View

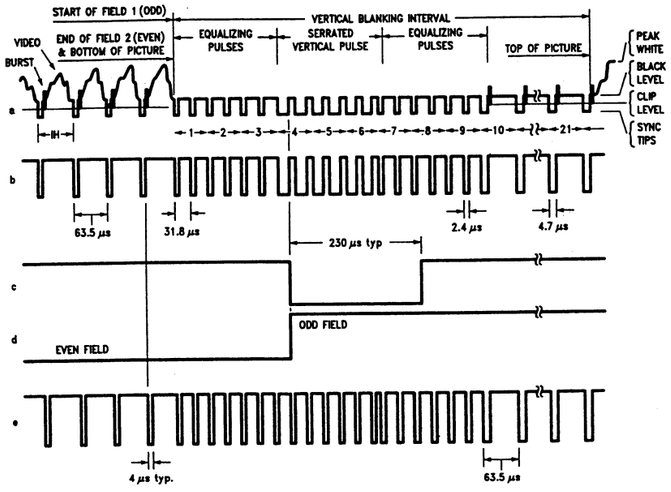
■ M5222FP-XE 【MITSUBISHI】 (VCA)



Top View

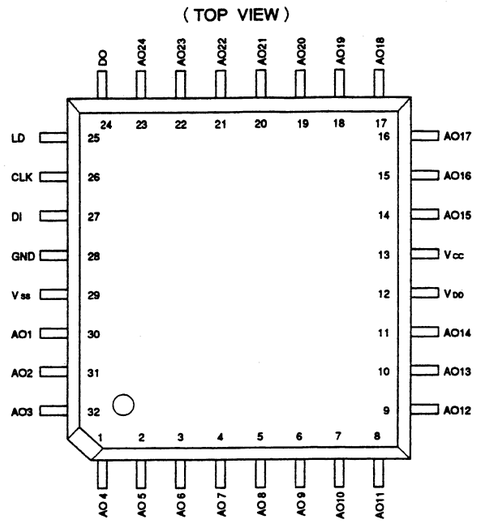
■ LM1881M-X 【National Semiconductor】
(Video Sync Separator)

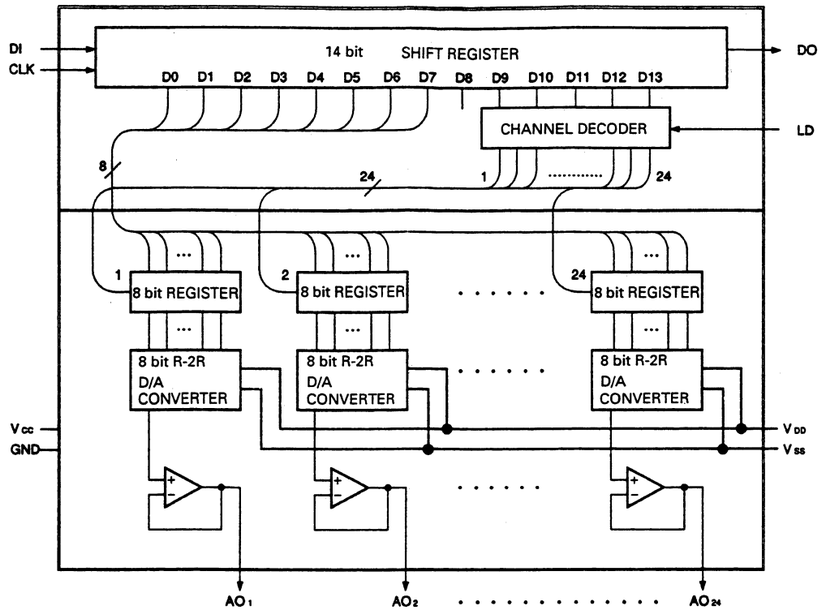




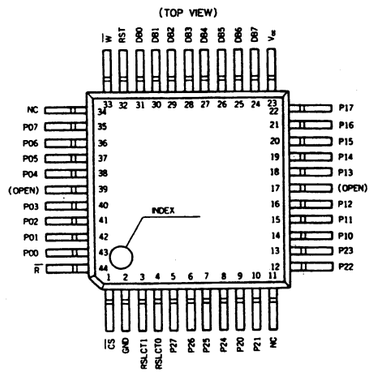
(a) Composite Video; (b) Composite Sync; (c) Vertical Output Pulse; (d) Odd/Even Field Index; (e) Burst Gate/Back Porch Clamp

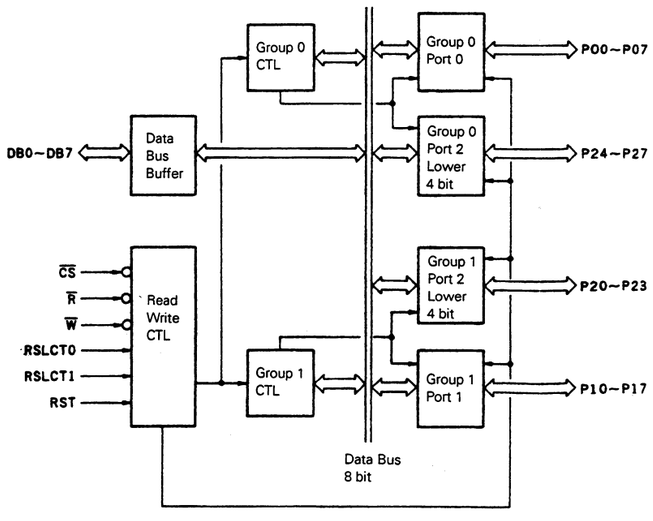
■ MB88345PF 【FUJITSU】
(D/A Converter)





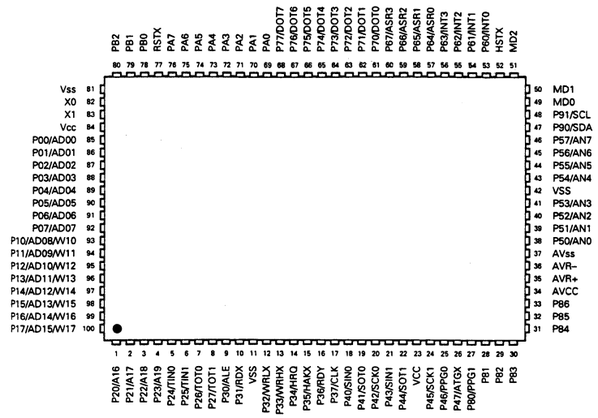
■ MB89255BH-PF 【FUJITSU】
(Paralel Data I/O Interface)

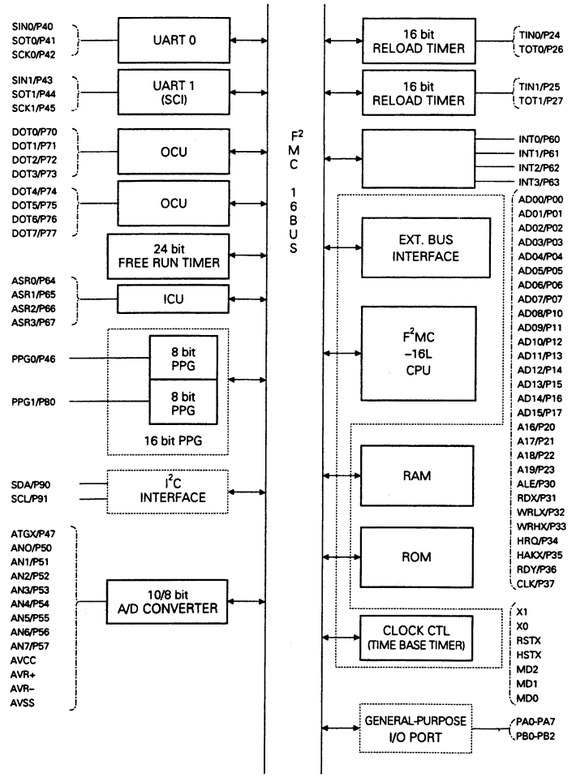




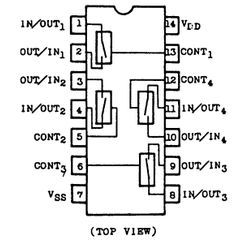
3-43

■ MB90T678PF 【MITSUBISHI】
(CPU)





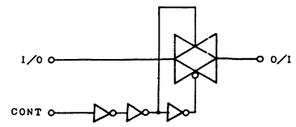
■ MC14066BF-X 【MOTOROLA】
(Quad Bilateral Switch)



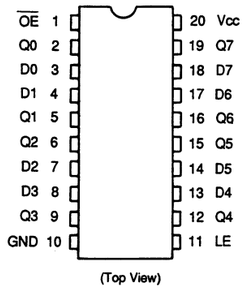
TRUTH TABLE

CONTROL	Impedance Between IN/OUT-OUT/IN *
H	$0.5\sim5\times10^{2}\Omega$
L	$>10^{9}\Omega$

LOGIC DIAGRAM



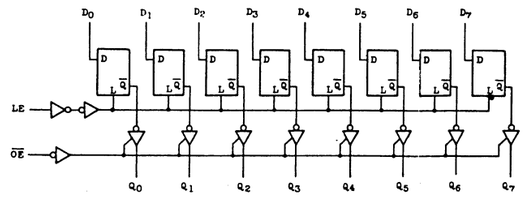
■ MC74HC373AF-X 【MOTOROLA】
(Octal D-Type Latch With NON-Inverted 3-State Output)



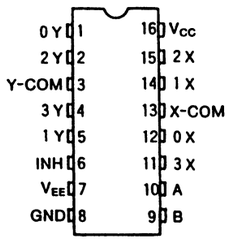
TRUE Table

INPUTS			OUTPUTS
OE	LE	D	
H	X	X	Z
L	L	X	Q_n
L	H	L	L
L	H	H	H

X : Don't Care
Z : Hi impedance
Qn : Q output level before the LE become "L".



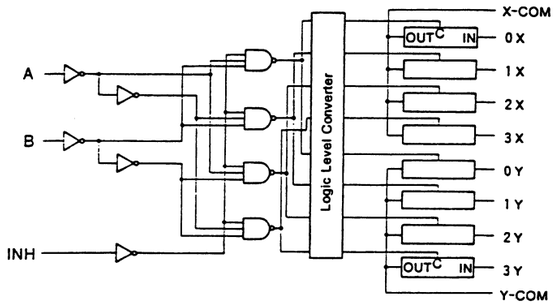
■ MC74HC4052F-X 【MOTOROLA】
(Dual 4-Channel Analog Multiplexer)



TRUE Table

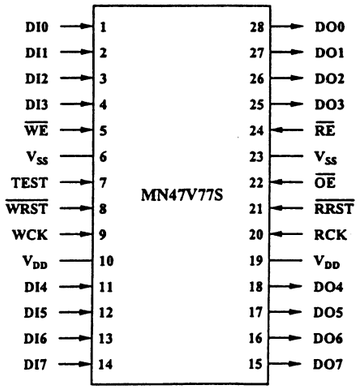
CONTROL INPUTS			"ON" CHANNEL
INHIBIT	B	A	HC4052A
L	L	L	0X, 0Y
L	L	H	1X, 1Y
L	H	L	2X, 2Y
L	H	H	3X, 3Y
H	X	X	NONE

X : DON'T CARE



■ MN47V77S-XE 【MATSUSHITA】
(256K-word x 8-bit FIFO Memory)

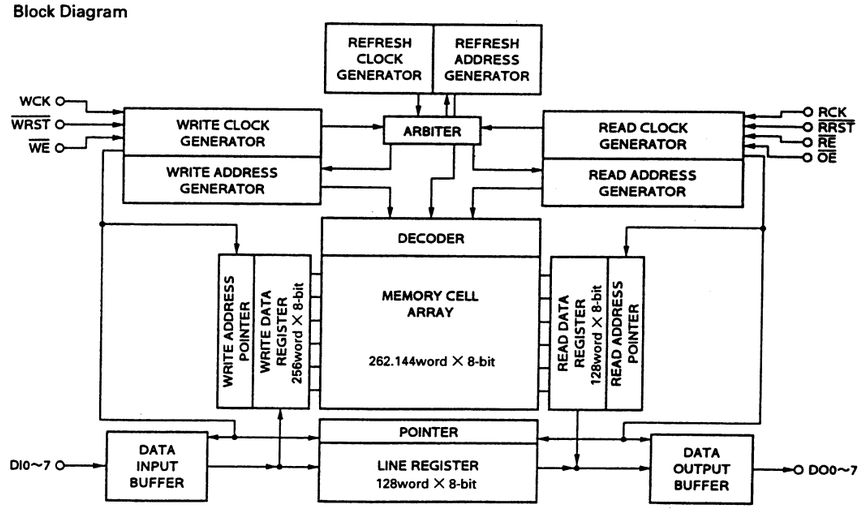
Top View



Pin Name

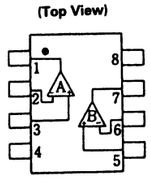
Symbol	Pin Name	Symbol	Pin Name
WCK	Write Clock	OE	Output Enable
RCK	Read Clock	DI0-7	Data Input
WRST	Write Reset	DO0-7	Data Output
RRST	Read Reset	VDD	Power Supply (+3.3V)
WE	Write Enable	VSS	Power Supply (0V)
RE	Read Enable	TEST	Test terminal

Block Diagram

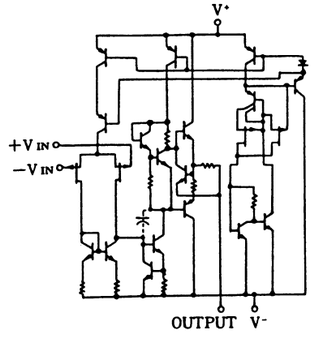


3-44

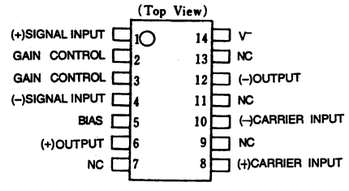
■ NJM062M-X 【JRC】
(J-FET Input Op.Amp)

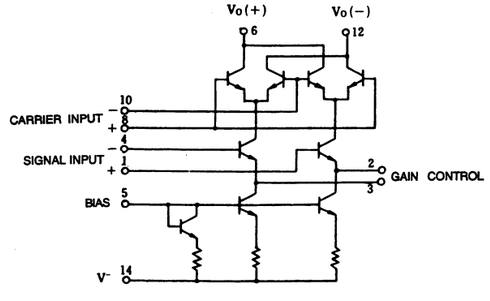


1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

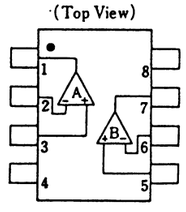


■ NJM1496M-X 【JRC】
(Balanced Modulator)

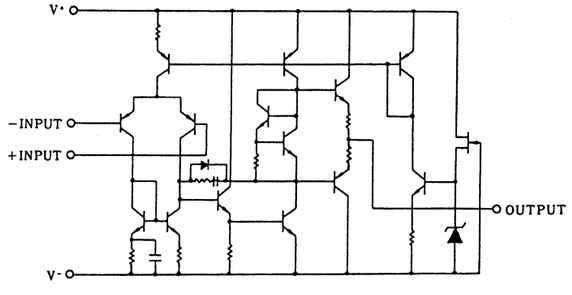




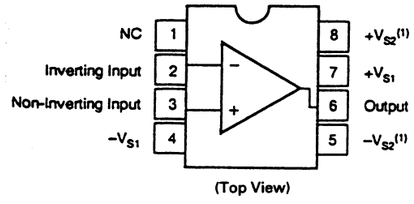
■ NJM2068M-D-X 【JRC】
(Dual Low-Noise Op.Amp)



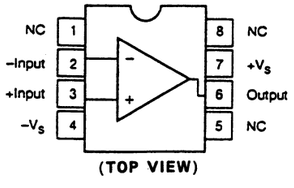
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺



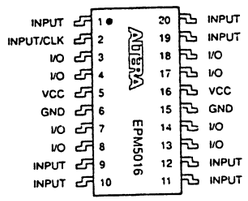
■ OPA655U-XE 【BBJ】
(Op.Amplifier)



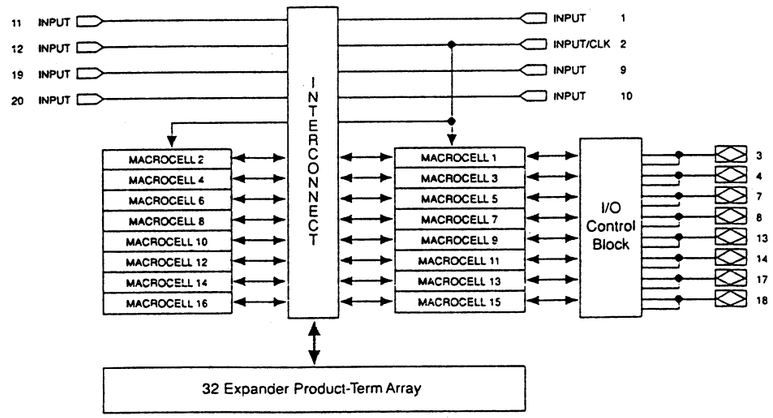
■ OPA658U-XE 【BBJ】
(Op.Amplifier)



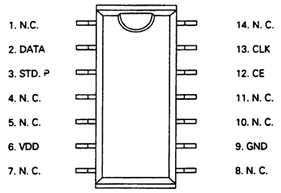
■ PL5016-15-003-2 【ALTERA】
(Electlical Eracable Programable Logic Devices)

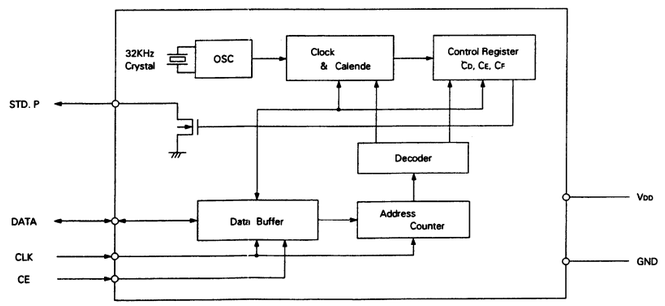


20-Pin SOIC
(TOP VIEW)



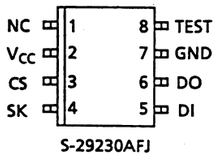
■ RTC-4513A 【EPSON】
(Real Time Clock)





■ S-29230AFJ-X 【SEIKO】
(C-MOS 2K-bit EEPROM)

8 pin SOP1
Top view

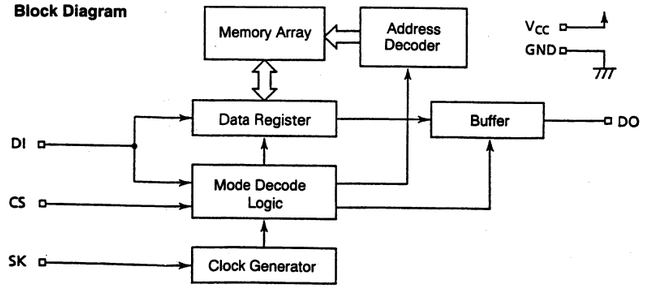


S-29230AFJ

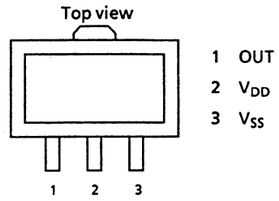
Pin Function

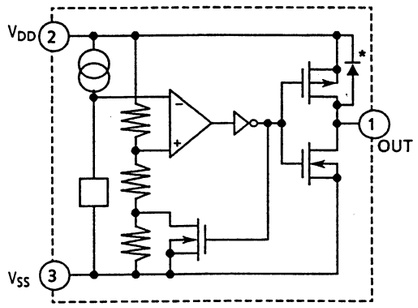
Pin Name	Pin No.		Function
	DIP	SOP1	
CS	1	3	Chip Select Input
SK	2	4	Serial Clock Input
DI	3	5	Serial Data Input
DO	4	6	Serial Data Output
GND	5	7	GND
TEST	6	8	Test : Open
NC	7	1	No Connect
Vcc	8	2	Power Supply

Block Diagram

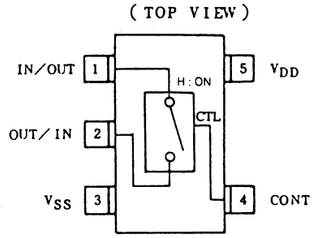


■ S-8054HN-CB-X 【SEIKO INSTRUMENTS】
(C-MOS Voltage Detector)



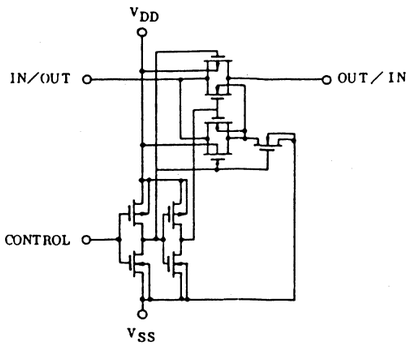


■ TC4S66F-X 【TOSHIBA】
(Bilateral Switch)

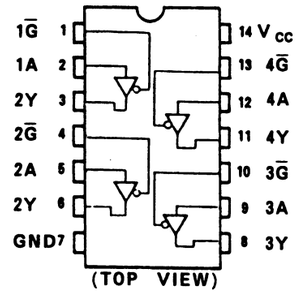


CONTROL	IMPEDANCE BETWEEN IN/OUT - OUT/IN ※
H	$0.5 \sim 5 \times 10^2\ \Omega$
L	$> 10^9\ \Omega$

※ See Electrical Characteristics



■ TC74HC125AF-X 【TOSHIBA】
(Quad Bus Buffer Gates With 3-State Outputs)

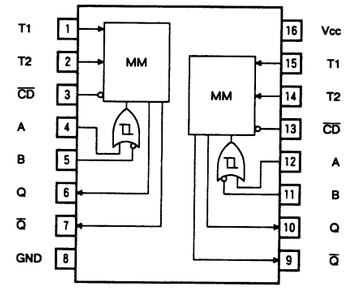


TC74HC125A TRUE Table

INPUTS		OUTPUTS
G	A	Y
H	X	Z
L	L	L
L	H	H

X : Don't Care
Z : High Impedance

■ TC74HC4538AFS-X 【TOSHIBA】
(Dual Retriggerable Monostable Multivibrator)

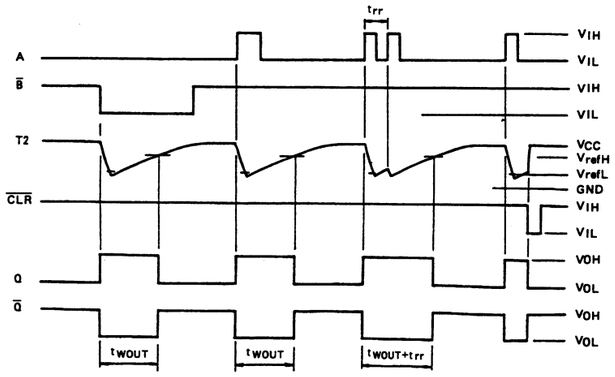


TOP VIEW

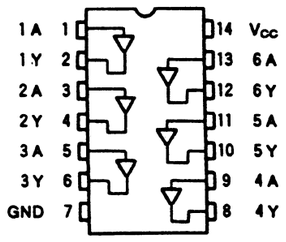
TRUE Table

INPUT			OUTPUT		NOTE
A	B	CD	Q	Q	
↑	H	H	⊓	⊔	OUTPUT ENABLE
X	L	H	L	H	INHIBIT
H	X	H	L	H	INHIBIT
L	↓	H	⊓	⊔	OUTPUT ENABLE
X	X	L	L	H	INHIBIT

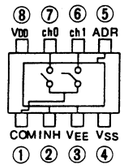
X:Don't Care



■ SN74LS07DB-XE 【TEXAS】
(Hex Buffers)



■ TC4W53F-X 【TOSHIBA】
(2-Channel Multiplexer)

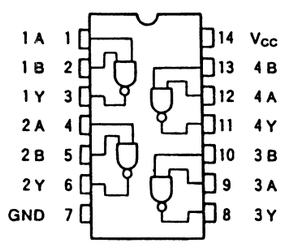


TRUE TABLE

CONTROL INPUT		ON CHANNEL
INH	ADR	
L	L	ch0
L	H	ch1
H	*	NONE

*Don't care

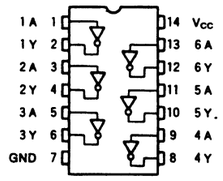
■ TC74HC00AF-X 【TOSHIBA】
(Quad 2-Input NAND Gates)



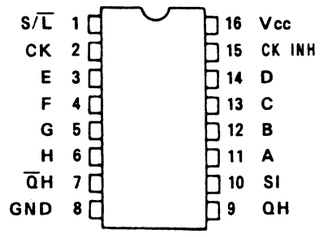
TRUE Table

A	B	Y
L	L	H
L	H	H
H	L	H
H	H	L

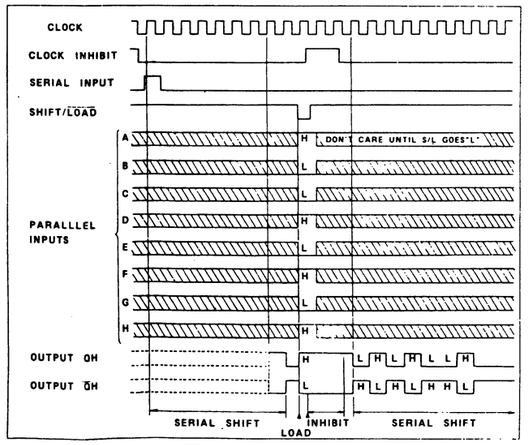
■ TC74HC04AF-X 【TOSHIBA】
(Hex Inverters)



■ TC74HC165AF-X 【TOSHIBA】
(8-Bit Serial or Parallel-In/Serial Out Shift Registers With Complementary Out)



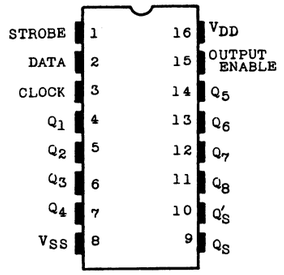
Timing chart



■ TC74VHC04FS-X 【TOSHIBA】
(Refer to TC74HC04AF-X.)

3-46

■ TC74HC4094AF-X 【TOSHIBA】
(8 Stage Bus Compatible Shift/Store Register)

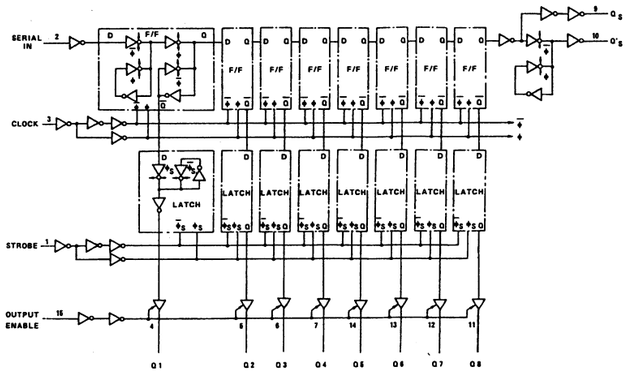


(TOP VIEW)

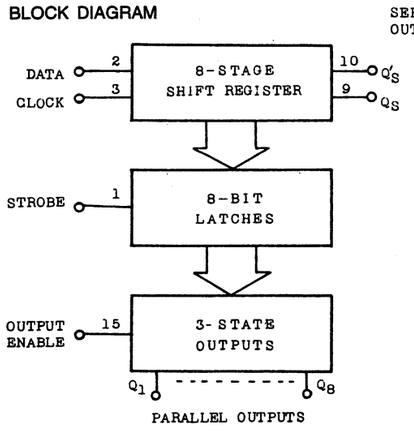
TRUTH TABLE

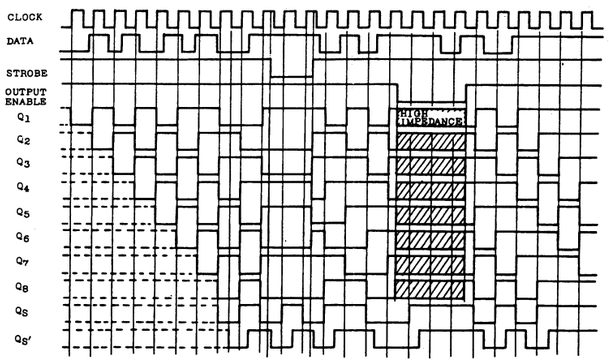
CL	OE	ST	D	PO		SO	
				Q_1	Q_n	Q_S	Q'_S
↑	H	H	L	L	Q_n-1	Q_7	NC
↑	H	H	H	H	Q_n-1	Q_7	NC
↑	H	L	*	NC	NC	Q_7	NC
↑	L	*	*	HZ	HZ	Q_7	NC
↓	H	*	*	NC	NC	NC	Q_S
↓	L	*	*	HZ	HZ	NC	Q_S

CL = Clock　　* = Don't care
OE = Output Enable　　NC = No Change
ST = Strobe　　HZ = High Impedance
D = Data
PO = Parallel Outputs
SO = Serial Output

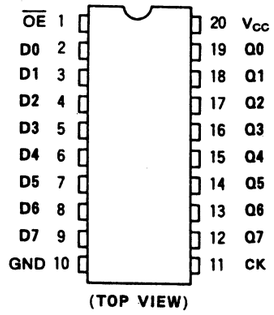


BLOCK DIAGRAM



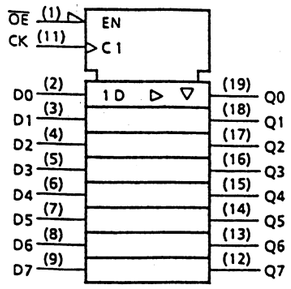


■ TC74VHC574FS-X 【TOSHIBA】
(Octal D-Type EDGE-Trigger Flip-Flop With NON Inverted 3-State Outputs)



(TOP VIEW)

Logic



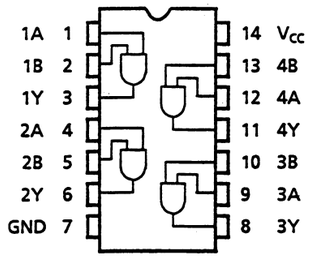
INPUTS			OUTPUT
$\overline{OE}$	CK	D	
H	X	X	Z
L	↑	X	Q_n
L	↓	L	L
L	↓	H	H

X : Don't Care
Z : High Impedance
Qn : No Change

■ TC74VHC125FS-X 【TOSHIBA】
(Refer to TC74HC125AF-X.)

■ TC74VHCT04FS-X 【TOSHIBA】
(Refer to TC74HC04AF-X.)

■ TC74VHC08FS-X 【TOSHIBA】
(Quad 2-Input AND Gates)

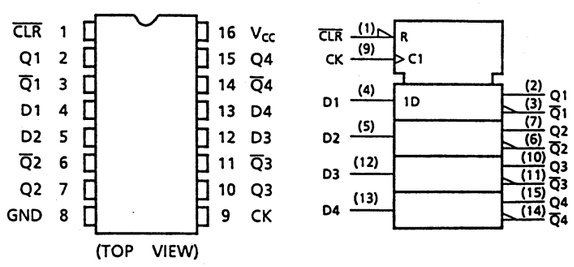


(TOP VIEW)

TRUE Table

A	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

■ TC74VHC175FS-X 【TOSHIBA】
(Quad D-type Flip Flop with Clear)



(TOP VIEW)

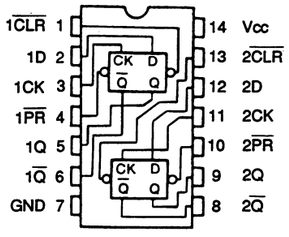
Logic

True Table

INPUTS			OUTPUTS		FUNCTION
$\overline{CLR}$	D	CK	Q	$\overline{Q}$	
L	X	X	L	H	CLEAR
H	L	↑	L	H	—
H	H	↑	H	L	—
H	X	↓	Q_n	$\overline{Q}_n$	NO CHANGE

X : Don't Care

■ TC74VHC74FS-X 【TOSHIBA】
(Dual D-Type Positive-EDGE-Triggered Flip-Flops With Preset AND Clear)



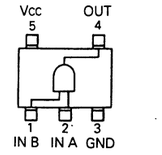
(Top View)

TRUE Table

INPUTS				OUTPUTS		FUNCTION
$\overline{CLR}$	$\overline{PR}$	D	CK	Q	$\overline{Q}$	
L	H	X	X	L	H	CLEAR
H	L	X	X	H	L	PRESET
L	L	X	X	H	H	—
H	H	L	↑	L	H	—
H	H	H	↑	H	L	—
H	H	X	↓	Q_n	$\overline{Q}_n$	NO CHANGE

X : Don't care

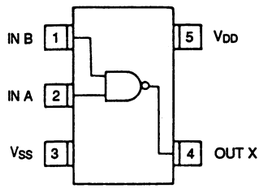
■ TC7S08F-X 【TOSHIBA】
(2 Input Single AND Gate)

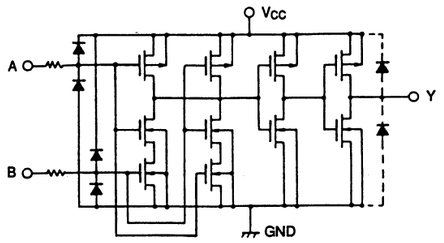


TRUE Table

A	B	X
L	L	L
L	H	L
H	L	L
H	H	H

■ TC7S00F-X 【TOSHIBA】
(2-Input NAND Gate)

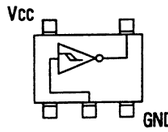




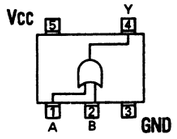
TRUE Table

A	B	X
L	L	H
L	H	H
H	L	H
H	H	L

■ TC7S14F-X 【TOSHIBA】
(Schmitt trigger)



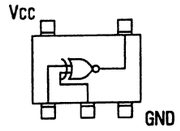
■ TC7SH32FU-X 【TOSHIBA】
(2 Input Single OR Gate)



TRUE Table

A	B	Y
H	H	H
L	H	H
H	L	H
L	L	L

■ TC7S86F-X 【TOSHIBA】
(Single Exelusive OR Gate)



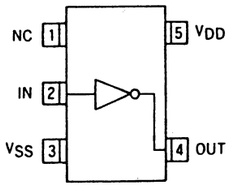
■ TC7SH00FU-X 【TOSHIBA】
(Refer to TC7S00F-X.)

■ TC7SH08FU-X 【TOSHIBA】
(Refer to TC7S08F-X.)

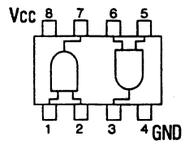
■ TC7SH86FU-X 【TOSHIBA】
(Refer to TC7S86F-X.)

■ TC7SU04F-X 【TOSHIBA】
(Invertor)

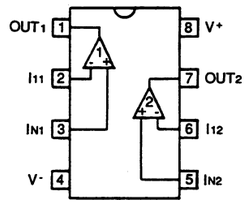
Pin arangement



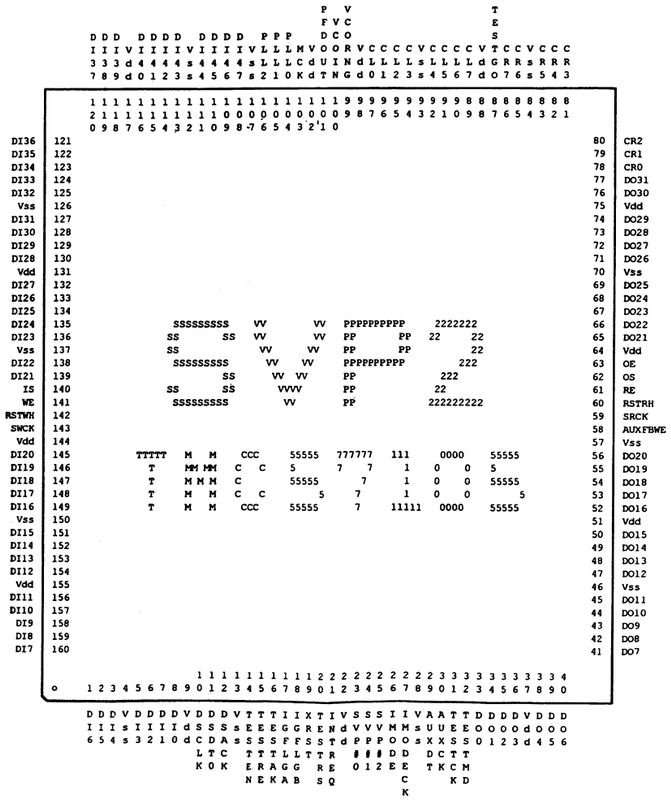
■ TC7W08F-X 【TOSHIBA】
(2 Input Dual AND Gate)



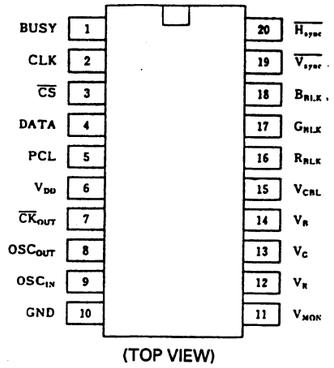
■ UPC812G2-X 【NEC】
(Op.Amp.)



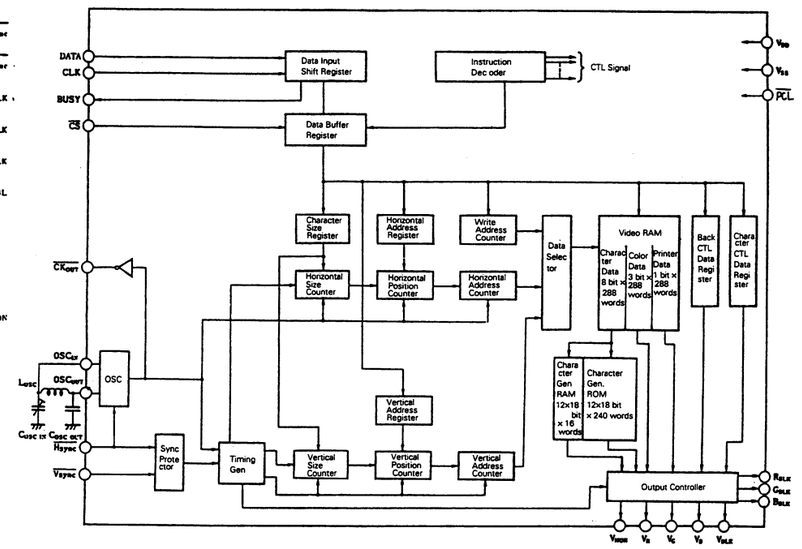
■ JCS0039 【JVC】
(Scan-line Video Processor)



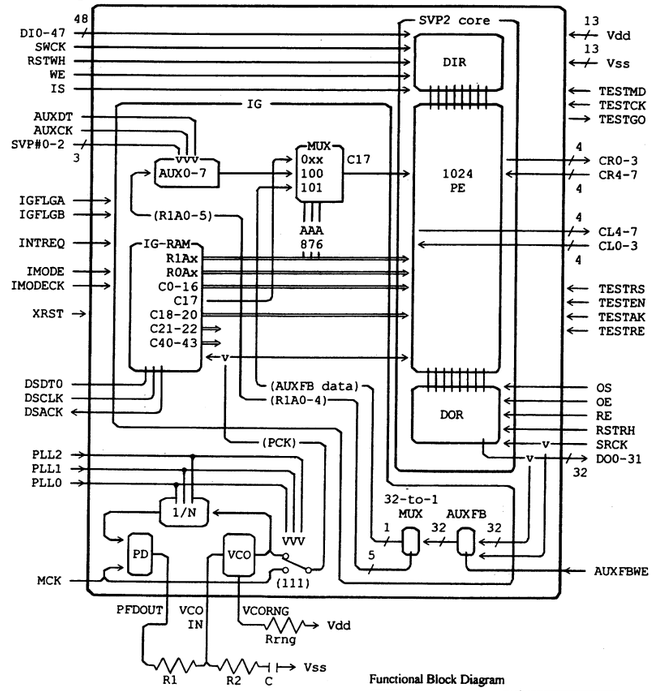
■ UPD6453GT-101 【NEC】
(On Screen Charactor Generator)



(TOP VIEW)



Block diagram



Functional Block Diagram

PLL2	0	0	0	0	1	1	1
PLL1	0	0	1	1	0	0	1
PLL0	0	1	0	1	0	1	0
N	8	7	6	5	4	3	2

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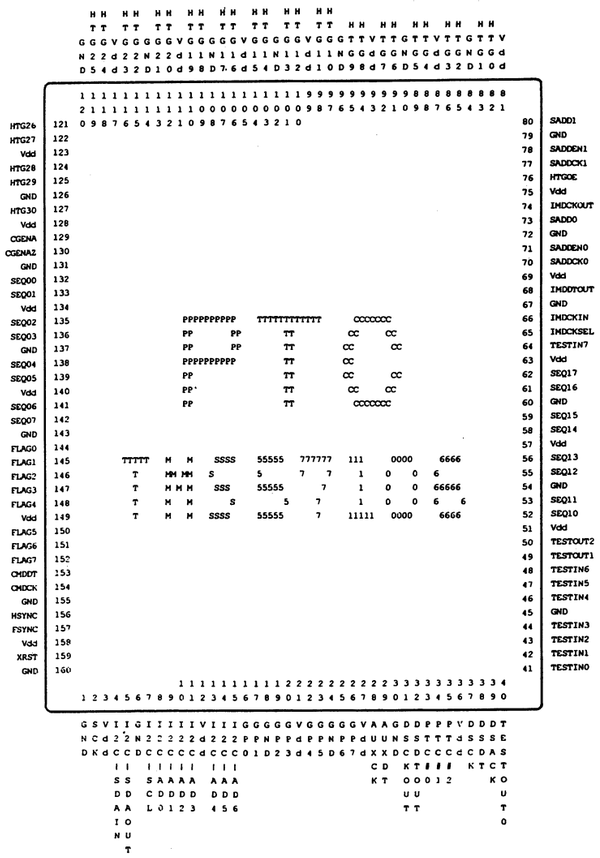
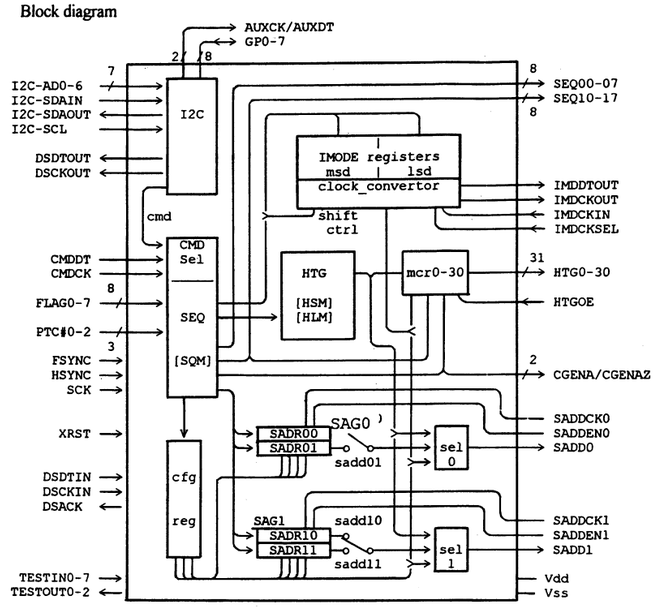
■ TMS57106PCE 【TEXAS】
(Programmable Timing Controller)



Block diagram

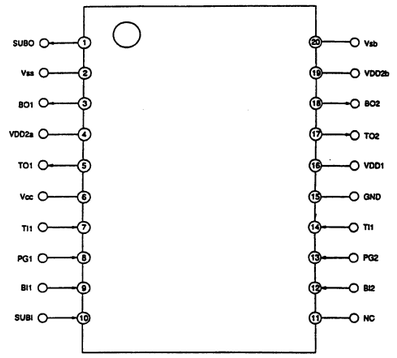


* cfg reg (Config Register)
* mcr (Macro Block)

Program memory size:

SQM(Sequence memory)	= 2048 * 16 bits
HSM(HTG Sequence memory)	= 4096 * 16 bits
HLM(HTG Loop memory)	= 512 * 32 bits

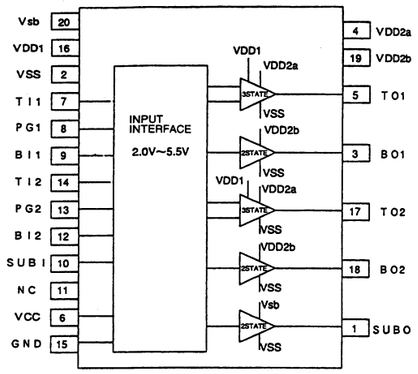
■ UPD16510GR-X 【NEC】
(Level Shifter)



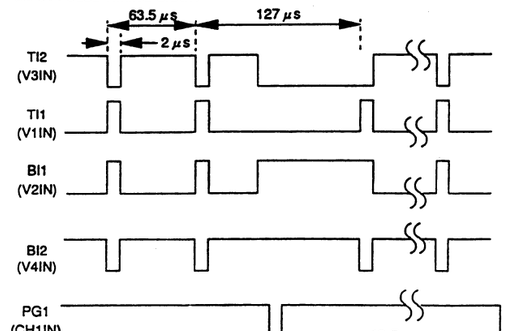
TOP VIEW

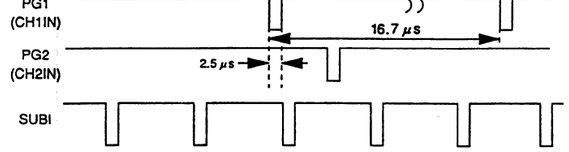
INPUT				OUTPUT		
TI1,2	PG	BI1,2	SUBI	TO1,2	BO1,2	SUBO
L	H	–	–	VHa	–	–
H	H	–	–	VL	–	–
L	L	–	–	VH	–	–
H	L	–	–	VL	–	–
–	–	L	–	–	VHb	–
–	–	H	–	–	VL	–
–	–	–	L			VL
–	–	–	H			VHH

(VL=VSS、VHa=VDD2a、VHb=VDD2b、VH=VDD1、VHH=Vsb)

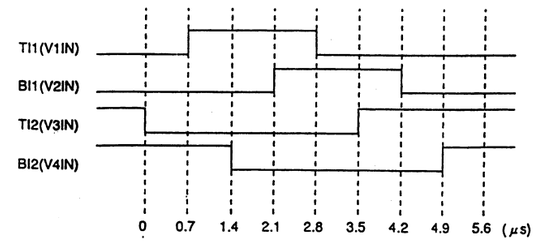


INPUT PULSE TIMING CHART





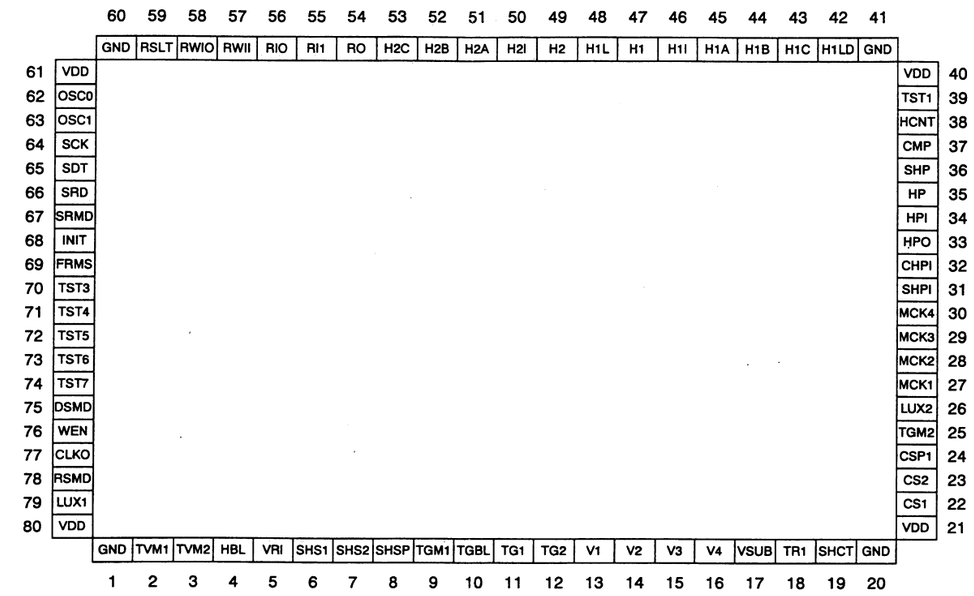
OVERLAP EXPANSION CHART



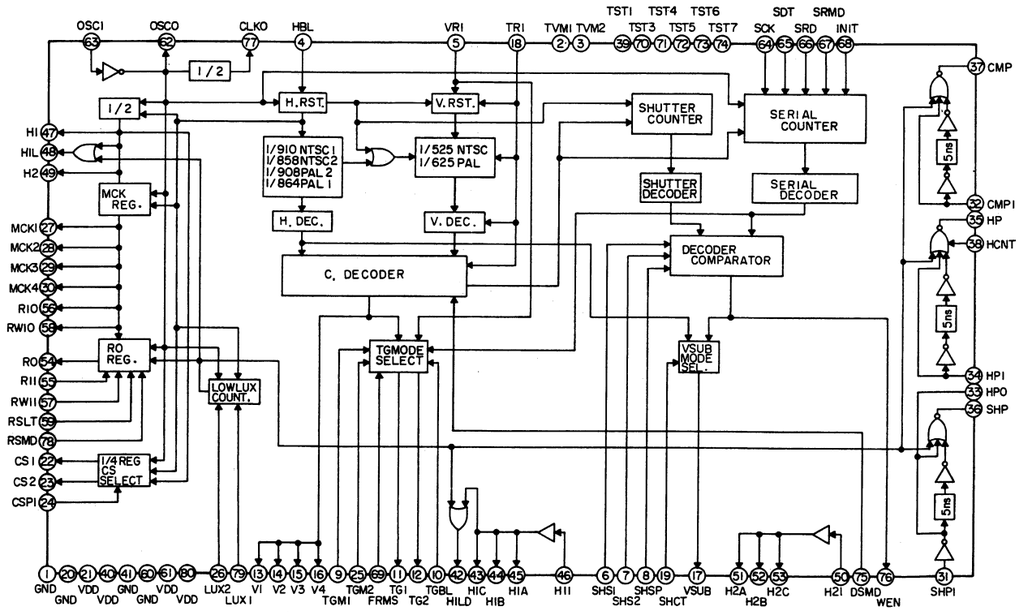
INPUT WAVE FORM

■ **UPD9438BGK-BE9 【NEC】**
(Timing Generator)

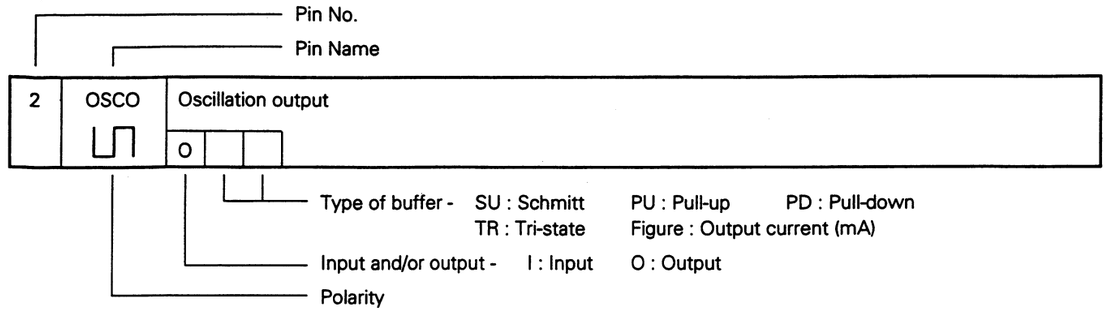
(Top View)



BLOCK DIAGRAM



[Explanation of column]



No.	Symbol	Description
1	GND	Grounding
2	TVM1 —	TV mode 1 I PD
3	TVM2 —	TV mode 2 I PD

	NTSC 1 1820 FH	NTSC 2 1716 FH	PAL 2 1816 FH	PAL 1 1728 FH
TVM1	L	H	L	H
TVM2	L	L	H	H

4	HBL	Horizontal B lanking input (øHBLK) I SH PU • Horizontal SYNC. input terminal to be connected with IFHB of SYNC generator. The leading edge is detected.
5	VRI	EXT. vertical SYNC input I SH PU • Vertical SYNC. input terminal to be connected with IFVSA of sync generator. The leading edge is detected.
6	SHS1 —	Shutter speed 1 I PD
7	SHS2 —	Shutter speed 2 I PD
8	SHSP —	Shutter speed setting I PD

SHS2	SHS1	SHSP = L	FIELD SHSP = H	FRAME SHSP = H
L	L	1/60	1/60	1/30
L	H	1/100	1/30	1/15
H	L	1/2000	1/7.5	1/3.75
H	H	1/10000	1/3.75	1/1.875

Note: "FRAME" expresses storage time based on TG2 (pin 12) as the reference.

9	TGM1 —	Storage Mode 1 I PD • Input terminal for store mode setting. Use this terminal in combination with DSMD (pin 75) and TGM2 (pin 25). (Refer to the last page of this description of pin functions.)
10	TGBL	Transfer gate blanking I PD • Slow shutter speed input for multi-speed shutter • Becomes active as blanking pulse at the rise of pulse.
11	TG1	Transfer gate pulse 1 O 9 • Transfer gate drive pulse to transfer signal from photodiode to the vertical register (V1). (pin 13)
12	TG2	Transfer gate pulse 2 O 9 • Transfer gate drive pulse to transfer signal from photodiode to the vertical register (V3). (pin 15)

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No.	Symbol	Description
13	V1	V. transfer pulse 1 O 9 • Vertical transfer register drive pulse
14	V2	V. transfer pulse 2 O 9 • Vertical transfer register drive pulse
15	V3	V. transfer pulse 3 O 9 • Vertical transfer register drive pulse
16	V4	V. transfer pulse 4 O 9 • Vertical transfer register drive pulse
17	VSUB	Board shutter pulse O 13 • Board shutter pulse to operate VOD shutter
18	TRI	Random shutter function reset mode selection L: Sync reset mode H: Sync non-reset mode I PD
19	SHCT	Shutter control I SH PD • Terminal to control shutter speed of multi-speed shutter. • When this terminal is used, set the serial shutter to 1/10000. • High level stops VSUB (pin 17) output.
20	GND	Grounding
21	VDD	+5 V power supply
22	CS1	Color sampling pulse 1 O 9 • Sampling pulse output for color separation sample holding
23	CS2	Color sampling pulse 2 O 9
24	CSP1	Color sampling pulse phase setting 1 I PD • Phases of CS1 (pin 22) and CS2 (pin 23) are settable by this pulse.
25	TGM2	Store mode 2 I PD Input terminal for store mode setting. Use this terminal in combination with DSMD (pin 75) and TGM1 (pin 9). (Refer to the last page of this description of pin functions.)
26	LUX2	Low lux mode 2 I PU Low Lux setting terminal 2. L : Corresponding to CDS, H : Corresponding to RDS Refer to the usage example and Lolux mode tables.
27	MCK1	Main clock 1 O 9 • Main clock fck output terminal. • Output signal having the same phase as H1 (pin 47).
28	MCK2	Main clock 2 O 9 • Main clock fck output terminal. • Output signal whose phase is 90° delayed from H1 (pin 47).

CSP2	CSP1	CS1	CS2
L	L	MCK1	MCK1
L	H	MCK2	MCK2
H	L	MCK3	MCK3
H	H	MCK4	MCK4

No.	Symbol	Description
29	MCK3	Main clock 3 O 9 • Main clock fck output terminal. • Output signal whose phase is 180° delayed from H1 (No. 47).
30	MCK4	Main clock 4 O 9 • Main clock fck output terminal. • Output signal whose phase is 270° delayed from H1 (No. 47).
31	SHP1	Sample holding pulse input I SH • Input terminal to receive SHP (No. 36) output signal. • Input signal is equivalent to main clock.
32	CMPI	Clamp pulse input I SH • Input terminal to receive SHP (No. 36) output signal. • Input signal is equivalent to main clock.
33	HPO	Half pitch output O 9 • Output signal approx. 20 ns behind of SHP (No. 36) output. • To be connected with HP1 (No. 34) through capacitor and resistor.
34	HPI	Half pitch input I SH • Input terminal for fine adjustment of HP (No. 35) output. • To be connected with HPO (No. 33) through capacitor and resistor.
35	HP	HP Half pitch O 9 • Half pitch signal is used as a sampling one.
36	SHP	Sample holding pulse O 9 • To sample video signal.
37	CMP	Clamp pulse O 9 • To clamp video siganl.
38	HCNT	Half pitch control I SH PD • To fix HP (No. 35) pulse at High level. L : Normal mode output H : High level fixing output
39	TST1	Test pin 1 I PD • Should be open in general.
40	VDD	+5 V power supply
41	GND	Grounding
42	H1LD	H. final gate transfer pulse for 3-CCD O 9 • Horizontal drive pulse output that has High level in horizontal blanking period. • When set to the Lolux mode corresponding to RDS, the central part of drive signal output is taken off. (Refer to the Lolux mode table)
43	H1C	H. transfer pulse for 3-CCD O 13 • Horizontal drive pulse output that has High level in horizontal blanking period
44	H1B	H. transfer pulse for 3-CCD O 13 • Horizontal drive pulse output that has High level in horizontal blanking period
45	H1A	H. transfer pulse for 3-CCD O 13 • Horizontal drive pulse output that has High level in horizontal blanking period

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No.	Symbol	Description
46	H1I	H. transfer pulse input for 3-CCD I • Input terminal to distribute signal to horizontal transfer pulse terminals for 3-CCD. • Connect with H1 (No. 47) for use of 3-CCD camera.
47	H1	H. transfer pulse O 13 • Horizontal drive signal output that has High level in horizontal blanking period. • Connect with H1I (No. 46) for use of 3-CCD camera.
48	H1L	H. final gate transfer pulse O 9 • Horizontal drive signal output that has High level in horizontal blanking period. • When set to the Lolux mode corresponding to RDS, the central part of drive signal output is taken off. (Refer to the Lolux mode table)
49	H2	H. transfer pulse O 13 • Horizontal drive signal output that has Low level in horizontal blanking period. • Connect with H2I (No. 50) for use of 3-CCD camera.
50	H2I	H. transfer pulse input for 3-CCD I • Input terminal to distribute signal to horizontal transfer pulse terminals for 3-CCD. • Connect with H2 (No. 49) for use of 3-CCD camera.
51	H2A	H. transfer pulse for 3-CCD O 13 • Horizontal drive signal output that has Low level in horizontal blanking period.
52	H2B	H. transfer pulse for 3-CCD O 13 • Horizontal drive signal output that has Low level in horizontal blanking period.
53	H2C	H. transfer pulse for 3-CCD O 13 • Horizontal drive signal output that has Low level in horizontal blanking period.
54	RO	H. output reset O 9 • CCD output reset pulse terminal. • This pulse is added with DC component and supplied to øR terminal of CCD.
55	RII	H. output reset timing input I PU SH • Input terminal to adjust output timing of RO (No. 54) with external input. • Active when RSLT (No. 59) has High level. To be connected with RIO (No. 56).
56	RIO	H. output reset timing output O 9 • Output terminal to adjust output timing of RO (No. 54) with external input. • To be connected with RII (No. 55).
57	RWII	H. output reset pulse width setting input I PU SH • Input terminal to adjust pulse width of RO (No. 54) with external input. • Active when RSLT (No. 59) has High level. To be connected with RWIO (No. 58).
58	RWIO	H. output reset pulse width setting output O 9 • Output terminal to adjust pulse width of RO (No. 54) with external input. • To be connected with RWII (No. 57).
59	RSLT	H. output reset switching I PD • Input terminal to switch setting mode of RO (No. 54) output. L : Internal setting H : External setting
60	GND	Grounding
61	VDD	+5 V power supply
62	OSCO	Oscillator output O • Output terminal of built-in oscillation circuit

No.	Symbol	Description
63	OSCI	Oscillator input I • Input terminal of built-in oscillator circuit
64	SCK	Serial clock I • Clock input terminal for serial interface. • Reads in at the pulse rise and inputs 1/4 frequency of original oscillation or lower.
65	SDT	Serial data — I • Data input terminal for serial interface. Input data is positive logic. • Sequential reading to start with LSB.
66	SRD	Reception enable signal — O 9 • Enable signal output terminal for serial interface to inform microprocessor whether it is enabled for data reception or disabled. L : Enabled for data reception H : Disabled for data reception
67	SRMD	Reception mode switching — I PD • L : Reception is possible only in V. blanking period. When reception does not finish in V. blanking period : Ineffective • H : Reception is always possible.
68	INIT	Serial reset — I • L : Disables serial interface from operation, or resets it forcibly (hard resetting). • H : Enables serial interface for original operation.
69	FRMS	Frame select — I PD 1-pixel or 2-pixel read-out field is selectable at a unit of frame. L : 1st and 2nd fields read-out H : 3rd and 4th fields read-out
70	TST3	Test pin 3 — I PD • Should be open in general.
71	TST4	Test pin 4 — I PD • Should be open in general.
72	TST5	Test pin 5 — I PD • Should be open in general.
73	TST6	Test pin 6 — I PD • Should be open in general.
74	TST7	Test pin 7 — I PD • Should be open in general.
75	DSMD	Device mode — I PD • Switching terminal for 1/3-CCD or 2/3-CCD. L: Conforming to 1/3-CCD H: Conforming to 2/3-CCD
76	WEN	Write enable O 13 • Timing pulse output to write data in external memory at slow shutter speed. • At normal shutter speed, output signal is same with VD. • But it becomes 0.5H delayed signal in 2nd field.
77	CLKO	Clock output O 13 • Half divided output of oscillation frequency
78	RSMD	Switching of H. output reset pulse polarity — O PD • To switch output polarity of RO (No. 54). L : Positive H : Negative
79	LUX 1	Low lux mode — I PD • Low lux setting terminal L : Normal mode H: Lolux mode Refer to the low lux mode table.
80	VDD	+5 V power supply

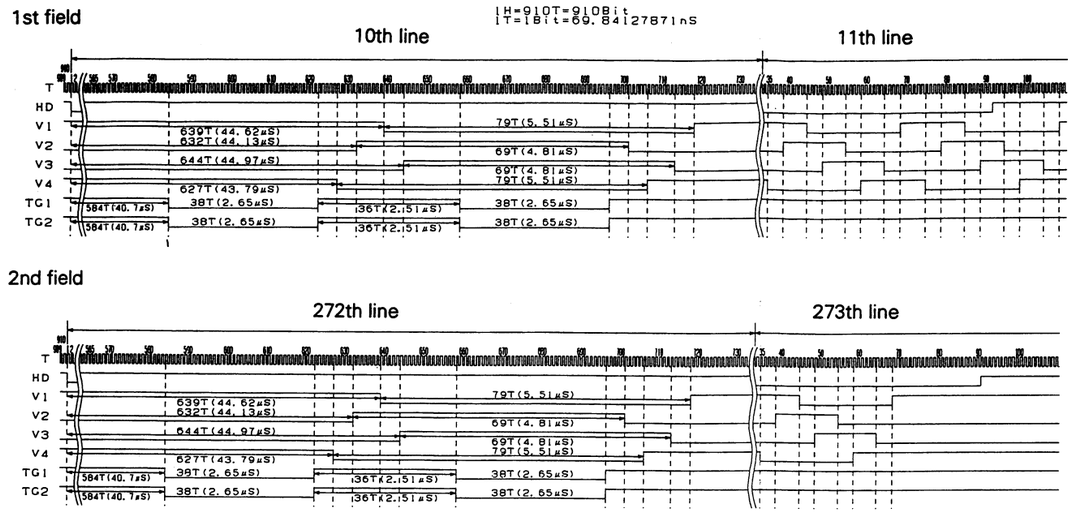
- When CCD used and read-out method

DSMD	TGM2	TGM1	When CCD used	Read-out method
L	L	L	1/3 CCD	Field
L	L	H	1/3 CCD	Frame
L	H	L	Inhabit	Inhabit
L	H	H	Inhabit	Inhabit
H	L	L	2/3 CCD	Field
H	L	H	2/3 CCD	Frame
H	H	L	2/3 CCD	2 pixels
H	H	H	2/3 CCD	1 pixel

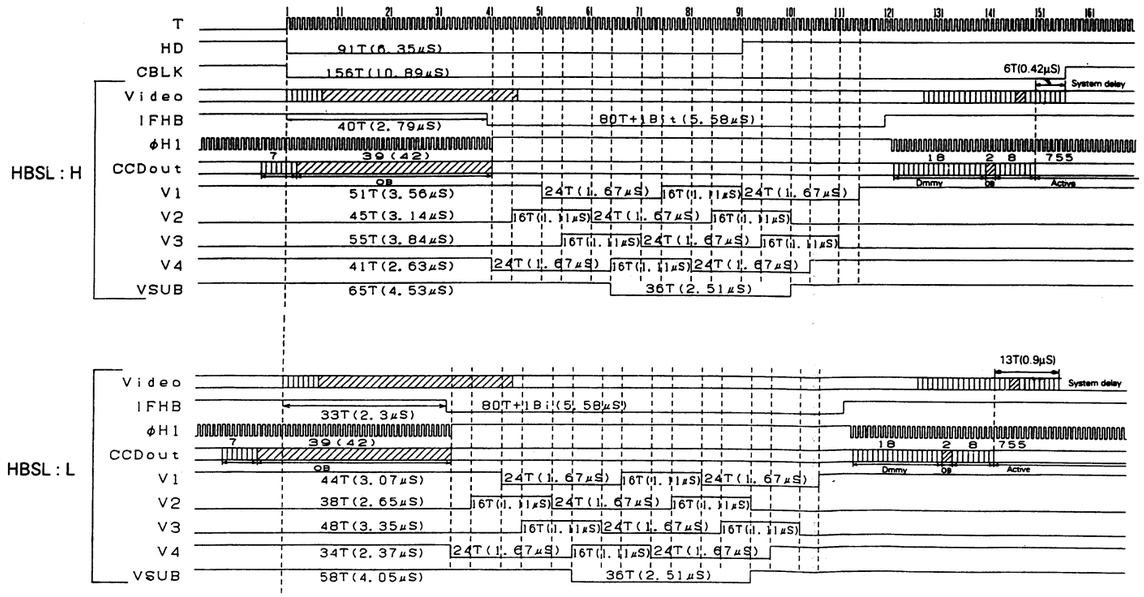
- Lolux mode table

LUX2	LUX1	Mode
L	L	Normal
L	H	CDS
H	L	Normal
H	H	RDS

[NTSC] 2/3" CCD H-TIMING

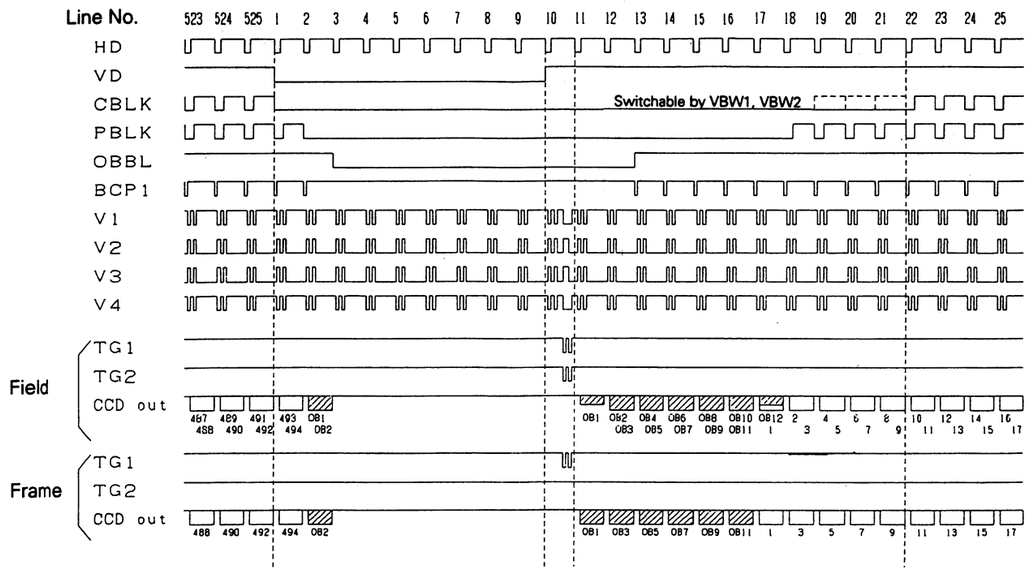


[NTSC] 2/3" CCD H-TIMING

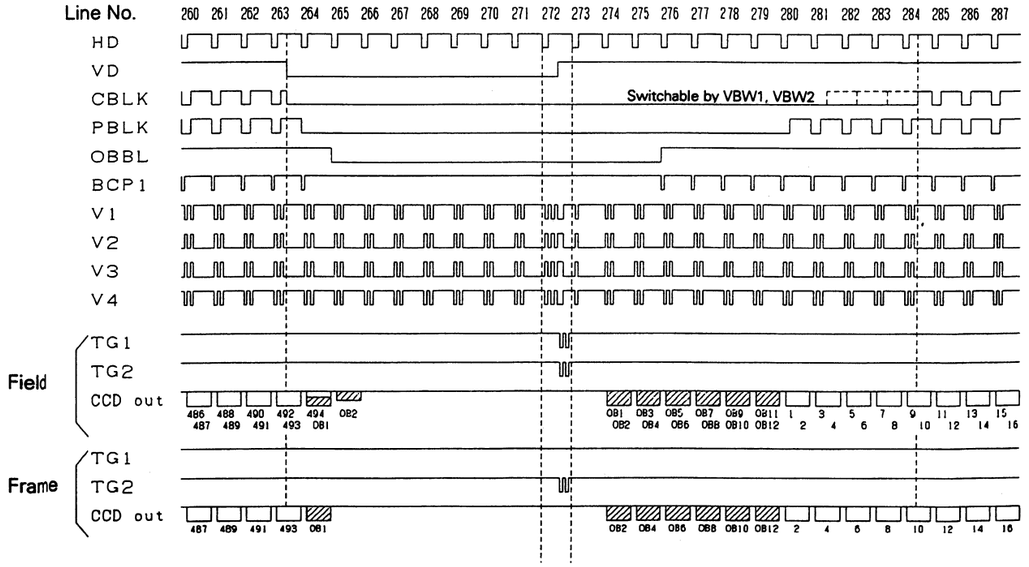


3-53

[NTSC] 2/3" CCD V-TIMING (1st field)

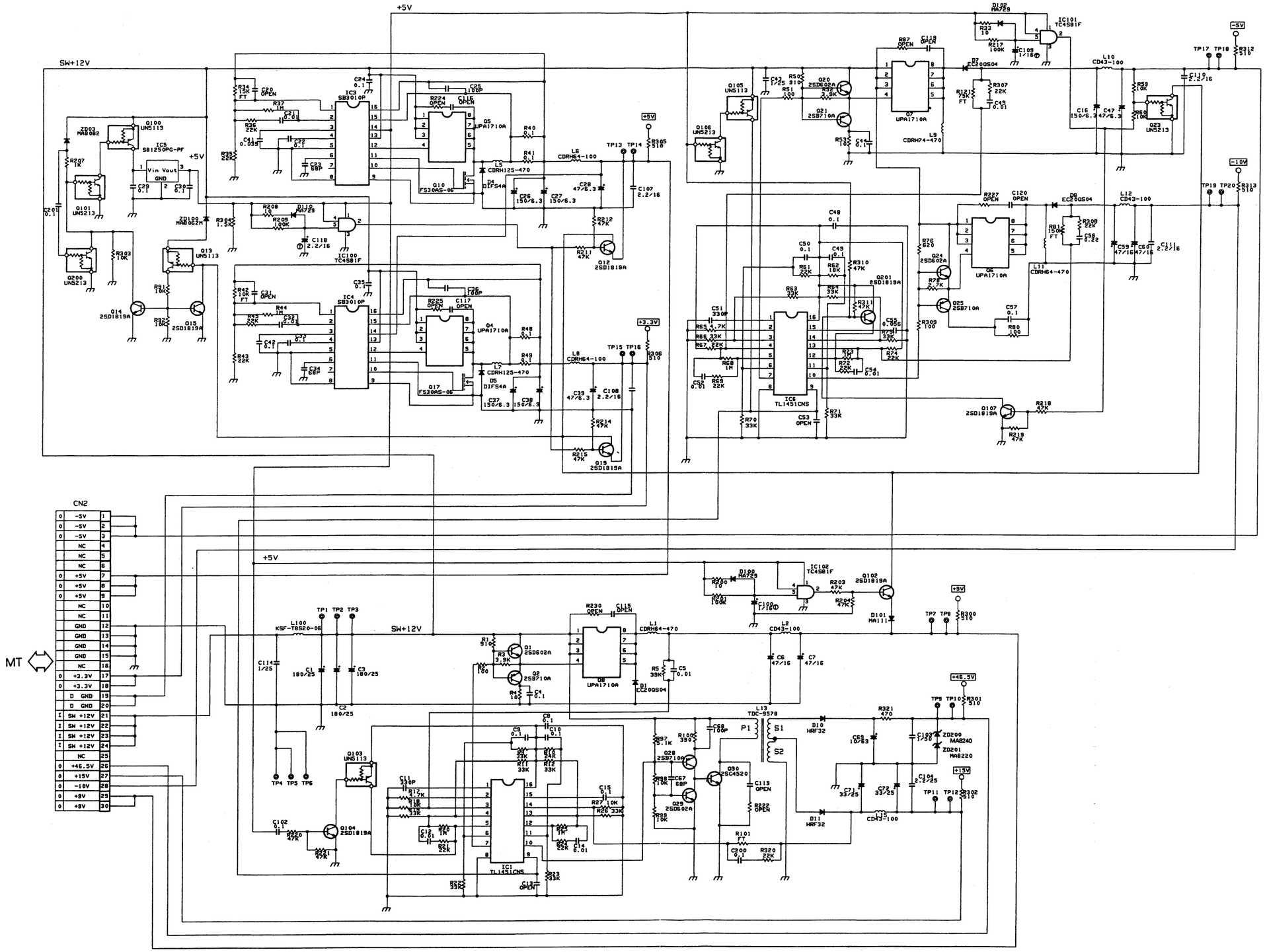


[NTSC] 2/3" CCD V-TIMING (2nd field)



3-54

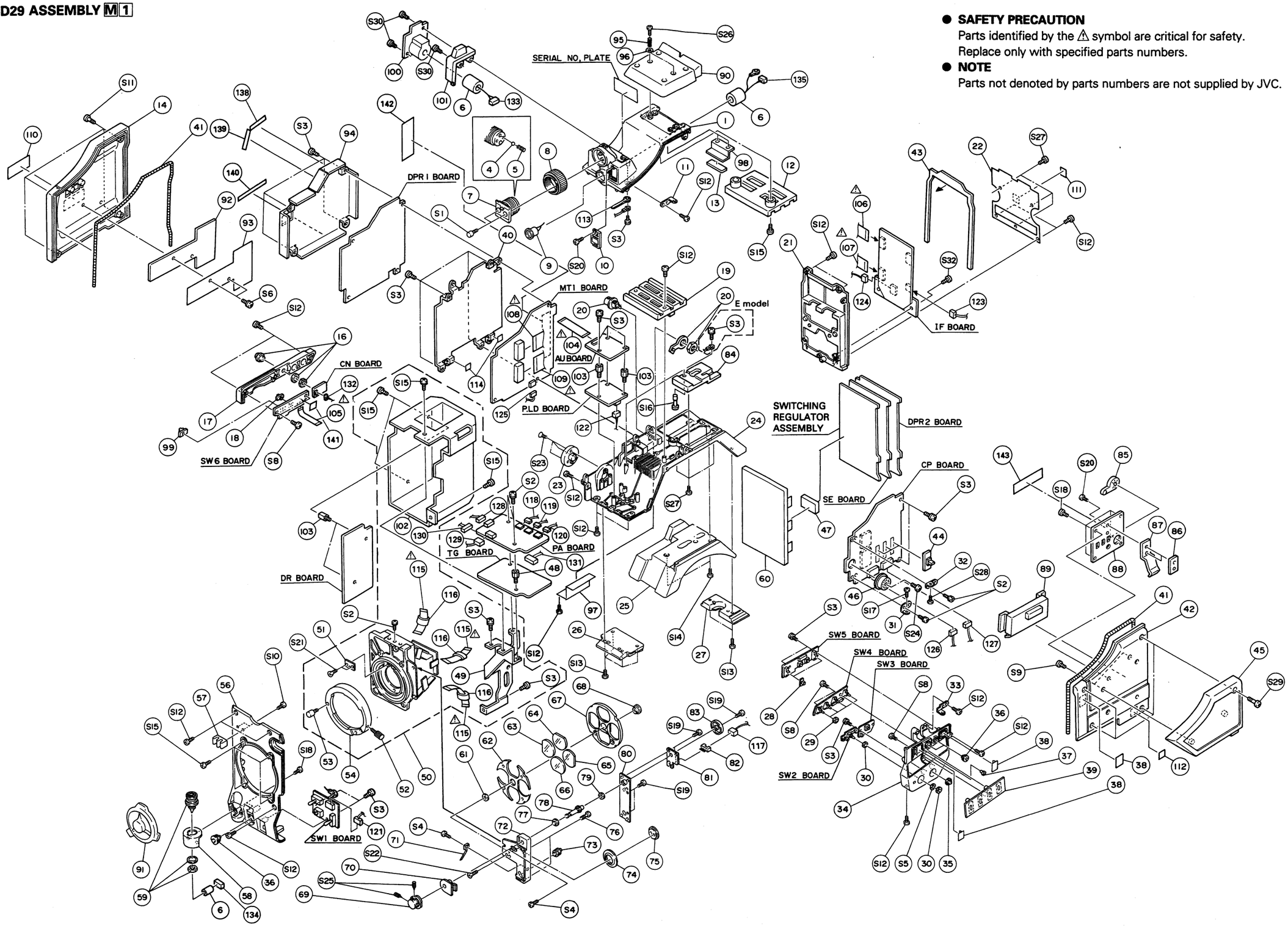
■ SCV2823-001
(Switching Regulator Assembly)



SECTION 4
EXPLODED VIEW AND PARTS LIST

4.1 KY-D29 ASSEMBLY M1

- **SAFETY PRECAUTION**
  Parts identified by the ⚠ symbol are critical for safety.
  Replace only with specified parts numbers.
- **NOTE**
  Parts not denoted by parts numbers are not supplied by JVC.



4.2 KY-D29 ASSEMBLY LIST M1

M1MM□□□□

Symbol No.	Part No.	Part Name	Description
1	SC10203-002	TOP FRAME	
4	SC40465-045	STEEL BALL	
5	SC45107-001	SPRING	
6	SCV2631-001	FERRITE CORE	
7	SC31861-001	VF BASE	
8	SC45127-002	VF RING	
9	SCV0238-06S	CONNECTOR	VF
10	SC45128-001	FRONT COVER	
11	SC45120-011	BRACKET	
12	SC32051-001	TOP RAIL	
13	SC45834-005	SHEET	for TOP PLATE
14	SC10192-041	SIDE COVER(L)	
16	SCV1517-001	CONNECTOR	REMOTE
17	SC20639-011	CONNECTOR COVER	
18	SC44556-002	KNOB	DISP MIX
19	SC32051-002	BOTTOM RAIL	
20	SCV0749-011	BNC CONNECTOR	GENLOCK INPUT/MONITOR OUTPUT
21	SC10210-001	REAR FRAME	
22	SC45999-003	CONNECTOR PLATE	
23	SC40928-001	LOCK GEAR	
24	SC10146-004	BOTTOM FRAME	
25	SC10155-001	SHOULDER PAD	
26	SC20479-002	FRONT BASE	
27	SC31335-011	REAR BASE	
28	SC43403-001	KNOB	AUTO IRIS/BLACK
29	SC45264-001	RUBBER	
30	Refer to SW2 board assembly parts list	NUT/WASHER	Included in S1 on the SW2 board
31	SC45119-001	BRACKET (LOWER)	
32	SC45119-011	BRACKET (UPPER)	
33	SC45120-011	BRACKET (TO OPERATE COVER)	
34	SC20472-002	OPERATE COVER	
35	SC44828-002	SWITCH CAP	
36	SC44828-011	KNOB	LOLUX/FULL AUTO/VTR
37	SC43451-001	LED LENS	FULL AUTO
38	SC45995-001	LABEL	FILTER/BLACK/AUTO IRIS
39	SC31491-002	SWITCH PANEL	
40	SC32055-001	BRACKET(DPR1)	
41	SC44847-365	SHIELD TUBE	for LEFT SIDE COVER
42	SC10204-002	SIDE COVER(R)	
43	SC46062-001	CUSHION	
44	SC45244-011	SLIDE KNOB	DNR/SHUTTER/FILE
45	SC20640-003	CHEEK PAD	
46	SC45994-002	VR KNOB	AUDIO LEVEL
47	SC45834-004	SHEET	for SWITCHING REGULATOR ASSEMBLY
48	SC46081-005	STUD	
49	SC31486-002	BRACKET	for DR/TG/PA board
50	SCM0937-N0A	OPTICAL BLOCK ASSEMBLY	for U VERSION
50	SCM0937-P0A	OPTICAL BLOCK ASSEMBLY	for E VERSION
51	SC44628-002	LENS PLATE	
52	SC44704-002	KNOB	for MOUNT RING
53	SC40779-001	MOUNT SCREW	
54	SC31370-001	MOUNT RING	
56	SC10151-031	FRONT FRAME	
57	SC42550-011	CABLE HOLDER	
58	SC44538-001	CAP	
59	SCV1938-12S	LENS CONNECTOR	LENS
60	SC32103-001	SHIELD CASE	for SWITCHING REGULATOR ASSEMBLY
61	Q03093-841	PLASTIC WASHER	
62	SC45118-002	FILTER SHEET	
63	SC44651-001	FILTER	3200K
64	SC44652-001	FILTER	5600K
65	SC44653-021	FILTER	5600K + 6.3%ND
66	SC45117-001	FILTER	CROSS FILTER
67	SC31365-001	FILTER WHEEL	
68	SC44649-001	SHAFT	
69	SC31363-011	FILTER KNOB	
70	SC44647-001	GEAR HOLDER	
71	SC44627-001	FILTER SPRING	
72	SC31316-002	FILTER BASE	
73	SC44506-001	FILTER STOPPER	
74	SC44505-001	FILTER.I.GEAR	
75	SC44633-001	FILTER.I.SHAFT	
76	SC43397-003	SCREW	
77	SC44939-001	SPACER	
78	SC44508-012	FILTER SHAFT	
79	Q03093-819	PLASTIC WASHER	
80	SC31364-004	FILTER COVER	
81	SC83183-002	FP BOARD	
82	SCV1978-S05	CONNECTOR	Connect to FP board
83	SC44676-005	FILTER CAP ASSEMBLY	
84	SC31482-001	VTR BASE	
85	SC32059-001	CAP(R.SIDE)	
86	SC45993-001	PLATE(R)	
87	SC45992-001	SPRING(R)	
88	SC32058-003	NAME PLATE(R)	
89	SC32057-001	COVER(R.SIDE)	
90	SC20473-002	HANDLE BASE	
91	SC43825-002	CAP	
92	SC45998-001	HEAT BRACKET	
93	SC45679-001	SHEET	
94	SC32056-001	SHIELD COVER	
95	SC45195-001	SPRING	
96	Q03093-817	PLASTIC WASHER	
97	SC45276-001	COVER	for BOTTOM FRAME
98	SC46110-001	TOP PLATE	
99	SC45991-001	KNOB	MIC INPUT
100	SCV0316-03S	XLR CONNECTOR	MIC 3 PIN
101	SC32054-001	SPACER(MIC)	
102	SC32086-001	OPTICAL COVER	Provided for service parts only.
103	SC45260-008	STUD	Provided for service parts only.
⚠ 104	SCV2337-2010BD	FLAT CABLE	CN13 [AU]-CN13 [MT]
⚠ 105	SCV2337-1008BD	FLAT CABLE	CN12 [SW6]-CN12 [MT]
⚠ 106	PGW0203-060260	FLAT CABLE	CN34 [IF]-CN34 [MT]
⚠ 107	PGW0203-060200	FLAT CABLE	CN35 [IF]-CN35 [MT]
⚠ 108	PGW0203-130240	FLAT CABLE	CN28 [CP]-CN28 [MT]
⚠ 109	PGW0203-130200	FLAT CABLE	CN27 [CP]-CN27 [MT]
110	SC43658-001	CAUTION LABEL	for U VERSION
110	PU54392-1	LABEL	for E VERSION
111	SC41957-012	CAUTION LABEL	for U VERSION
112	SC43948-001	CAUTION LABEL	for U VERSION
113	SCV0518-009	WIRE CLAMP	for MIC CONNECTOR CABLE
114	SC45598-011	SHEET	for DPR1 BRACKET
⚠ 115	SCV2337-2407BD	FLAT CABLE	CN6, 7,8 [ISB/ISG/ISR]-CN6, 7, 8 [DR]
116	PGZ02360	FERRITE BEADS	
117	SC45989-010	WIRE ASSEMBLY	CN10 [TG]-Filter assembly
118	SC45988-003	WIRE ASSEMBLY	CN3 [ISB]-CN3 [PA]
119	SC45989-004	WIRE ASSEMBLY	CN4 [ISG]-CN4 [PA]
120	SC45988-005	WIRE ASSEMBLY	CN5 [ISR]-CN5 [PA]
121	SC45989-015	WIRE ASSEMBLY	CN15 [SW1]-CN15 [AU]

Symbol No.	Part No.	Part Name	Description
122	SC45989-025	WIRE ASSEMBLY	CN25 [PLD]-CN25 [DPR1]
123	SC45983-043	WIRE ASSEMBLY	CN43 [AU]-CN43 [IF]
124	SC45989-011	WIRE ASSEMBLY	CN11 [SW2]-CN11 [IF]
125	SC45989-017	WIRE ASSEMBLY	CN17 [SW2]-CN17 [MT]
126	SC45989-016	WIRE ASSEMBLY	CN16 [SW4]-CN16 [CP]
127	SC45989-018	WIRE ASSEMBLY	CN18 [SW5]-CN18 [CP]
128	SC45989-001	WIRE ASSEMBLY	CN1 [PA]-CN1 [DPR1]
129	MBY409MB14N	WIRE ASSEMBLY	CN21 [PA]-CN21 [TG]
130	MBY214MB12N	WIRE ASSEMBLY	CN36 [PA]-CN36 [MT]
131	MBY314MB13N	WIRE ASSEMBLY	CN19 [TG]-CN19 [MT]
132	SC45989-037	WIRE ASSEMBLY	CN37 [CN]-CN37 [MT]
133	SC45987-020	WIRE ASSEMBLY	for MIC 3 PIN CONNECTOR
134	MBY10-4-10Z	WIRE ASSEMBLY	for LENS CONNECTOR
135	SC45987-024	WIRE ASSEMBLY	for VF CONNECTOR
138	SCV2848-0030	SHIELD TAPE (30 mm)	
139	SCV2848-0040	SHIELD TAPE (40 mm)	
140	SCV2848-0080	SHIELD TAPE (80 mm)	
141	SC41702-013	SHEET	Behind CONNECTOR COVER
142	SC41702-012	SHEET	Behind MT board
143	SC45996-001	VR LOCATION LABEL	
S1	BYS4025M	BOLT	M4×25
S2	LPSP3004Z	SCREW	M3×4
S3	LPSP3006Z	SCREW	M3×6
S4	SPSK2030M	SCREW	M2×3
S5	Q03091-202	WASHER	
S6	SDSP2604M	SCREW	M2.6×4
S8	SDSF2606M	SCREW	M2.6×6
S9	SDSF3008M	SCREW	M3×8
S10	SDSF2005M	SCREW	M2×5
S11	SC43397-011	SCREW	
S12	SDSP3006M	SCREW	M3×6
S13	SDSP3008M	SCREW	M3×8
S14	SDSP4006M	SCREW	M4×6
S15	SDSP3005M	SCREW	M3×5
S16	SC43390-004	SCREW	
S17	SDSP2004M	SCREW	M2×4
S18	SPSK2025M	SCREW	M2×2.5
S19	SPSK2050M	SCREW	M2×5
S20	SPSK2640M	SCREW	M2.6×4
S21	SSSK2030M	SCREW	M2×3
S22	SSSK2050M	SCREW	M2×5
S23	SSSP3006M	SCREW	M3×6
S24	SPSK1460M	SCREW	M1.4×6
S25	YRS3004M	SCREW	M3×4
S26	SC43390-003	SCREW	
S27	SDSP2604M	SCREW	M2.6×4
S28	SDSP2006M	SCREW	M2×6
S29	SC43397-008	SCREW	
S30	SPSP2608N	SCREW	M2.6×8
S32	SDSP2606M	SCREW	M2.6×6

4-3

SECTION 5
ELECTRICAL PARTS LIST

SAFETY PRECAUTION:
Parts identified by the ⚠ symbol are critical for safety. Replace only with specified parts numbers.
For maximum reliability and performance, all other replacement parts should be identical to those specified.

NOTE:
- Parts not denoted by parts numbers are not supplied by JVC.
- The electrical parts numbers listed on the manual are organized by new JVC standard parts system. The new parts numbers are different from previous numbers, even if the components are same.
- Abbreviations in this list are as follows:

RESISTORS

In the "Description" column:
All resistance values are in ohms (Ω).
K expresses kilo-ohm (1,000 ohms, kΩ).
M expresses mega-ohm (10^6 ohms, MΩ).

In the "Parts Name" column:

COMP. RESISTOR	:	Composition Resistor
U.F. RESISTOR	:	Non-inflammable Resistor
O.M.F. RESISTOR	:	Oxide Metalized Film Resistor
FUSI. RESISTOR	:	Fusible Resistor
M.P. RESISTOR	:	Metal Plate Resistor
M.G. RESISTOR	:	Metal Graze Resistor
M.F. RESISTOR	:	Metal Film Resistor
W.W. RESISTOR	:	Wire Wound Resistor

CAPACITORS

In the "Description" column:
All capacitance values are in microfarad (μF) unless otherwise indicated.
P expresses picofarad (10^{-12} farad, pF).

In the "Parts Name" column:

TRIM. CAPACITOR	:	Trimmer Capacitor
CER. CAPACITOR	:	Ceramic Capacitor
E. CAPACITOR	:	Electrolytic Capacitor
TAN. CAPACITOR	:	Tantalum Capacitor
MPP CAPACITOR	:	Metalized Polypropylene Capacitor
O.F. CAPACITOR	:	Oil Film Capacitor
MPF CAPACITOR	:	Metalized Polyfilm Capacitor
F.M. CAPACITOR	:	Film Mica Capacitor
P.P. CAPACITOR	:	Polypropylene Capacitor
P.S. CAPACITOR	:	Polystyrene Capacitor

Note: In the "Description" column of the parts list, (U) means the parts for the U version while (E) is for the E Version.

Symbol No.	Part No.	Part Name	Description		
IC1	SCV1585-064	I.C.(M)	JVC	(U)	← for U version
	SCV1585-067	I.C.(M)	JVC	(E)	← for E version

5.1 MT BOARD ASSEMBLY LIST [0][1]

SCK2478-00A [0][1]□□□□□□□

Symbol No.	Part No.	Part Name	Description
IC2	ADC0838CCWM-X	I.C.(M)	NATIONAL SEMICO
IC4	TC74HC165AF-X	I.C.(M)	TOSHIBA
IC5	TC74HC4094AF-X	I.C.(M)	TOSHIBA
IC6	TC74HC4094AF-X	I.C.(M)	TOSHIBA
IC9	TC4W53F-X	I.C.(M)	TOSHIBA
IC10	TC4W53F-X	I.C.(M)	TOSHIBA
IC11	NJM062M-X	I.C.(M)	JRC
Q3	DTA124EUA-X	TRANSISTOR	ROHM
Q4	DTA124EUA-X	TRANSISTOR	ROHM
Q5	DTC124EUA-X	TRANSISTOR	ROHM
Q6	DTA124EUA-X	TRANSISTOR	ROHM
Q7	DTA124EUA-X	TRANSISTOR	ROHM
Q8	DTA124EUA-X	TRANSISTOR	ROHM
Q9	2SJ364/QR/-X	FET	MATSUSHITA
Q10	2SK663/QR/-X	FET	MATSUSHITA
Q11	MSC3930/B/-X	TRANSISTOR	MOTOROLA
D1	HZU3CLL-X	ZENER DIODE	HITACHI
D2	HZU3CLL-X	ZENER DIODE	HITACHI
D3	MA143A-X	DIODE	MATSUSHITA
D4	MA143A-X	DIODE	MATSUSHITA
D5	MA143A-X	DIODE	MATSUSHITA
D7	MA142WK-X	DIODE	MATSUSHITA
D8	MA143A-X	DIODE	MATSUSHITA
D9	MA143A-X	DIODE	MATSUSHITA
D17	MA143A-X	DIODE	MATSUSHITA
D18	MA143A-X	DIODE	MATSUSHITA
D23	MA143A-X	DIODE	MATSUSHITA
D26	MA143A-X	DIODE	MATSUSHITA
D27	MA143A-X	DIODE	MATSUSHITA
D28	MA143A-X	DIODE	MATSUSHITA
D29	MA143A-X	DIODE	MATSUSHITA
R1	NRSA63J-223X	M.G.RESISTOR	22k 1/16W
R2	NRSA63J-223X	M.G.RESISTOR	22k 1/16W
R3	NRSA63J-223X	M.G.RESISTOR	22k 1/16W
R4	NRSA63J-223X	M.G.RESISTOR	22k 1/16W
R5	NRSA63J-392X	M.G.RESISTOR	3.9k 1/16W
R6	NRSA63J-223X	M.G.RESISTOR	22k 1/16W
R7	NRSA63J-622X	M.G.RESISTOR	6.2k 1/16W
R22	NRSA63J-106X	M.G.RESISTOR	10M 1/16W
R23	NRSA63J-106X	M.G.RESISTOR	10M 1/16W
R24	NRSA63J-102X	M.G.RESISTOR	1k 1/16W
R25	NRSA63J-332X	M.G.RESISTOR	3.3k 1/16W
R31	NRSA63J-272X	M.G.RESISTOR	2.7k 1/16W
R32	NRSA63J-103X	M.G.RESISTOR	10k 1/16W
R33	NRSA63J-334X	M.G.RESISTOR	330k 1/16W
R34	NRSA63J-104X	M.G.RESISTOR	100k 1/16W
R35	NRSA63J-124X	M.G.RESISTOR	120k 1/16W
R36	NRSA63J-102X	M.G.RESISTOR	1k 1/16W
R37	NRSA63J-103X	M.G.RESISTOR	10k 1/16W
R38	NRSA63J-472X	M.G.RESISTOR	4.7k 1/16W
R39	NRSA63J-220X	M.G.RESISTOR	22 1/16W
R48	NRSA63J-101X	M.G.RESISTOR	100 1/16W
R49	NRSA63J-101X	M.G.RESISTOR	100 1/16W
R50	NRSA63J-103X	M.G.RESISTOR	10k 1/16W
R51	NRSA63J-183X	M.G.RESISTOR	18k 1/16W
R52	NRSA63J-101X	M.G.RESISTOR	100 1/16W

Symbol No.	Part No.	Part Name	Description
R57	NRSA63J-223X	M.G.RESISTOR	22k 1/16W
R58	NRSA63J-103X	M.G.RESISTOR	10k 1/16W
R59	NRSA63J-823X	M.G.RESISTOR	82k 1/16W
R60	NRSA63J-273X	M.G.RESISTOR	27k 1/16W
R61	NRSA63J-392X	M.G.RESISTOR	3.9k 1/16W
R62	NRSA63J-622X	M.G.RESISTOR	6.2k 1/16W
R63	NRSA63J-750X	M.G.RESISTOR	75 1/16W
R64	NRSA63J-104X	M.G.RESISTOR	100k 1/16W
R65	NRSA63J-681X	M.G.RESISTOR	680 1/16W
R71	NRSA63J-223X	M.G.RESISTOR	22k 1/16W
R72	NRSA63J-223X	M.G.RESISTOR	22k 1/16W
R73	NRSA63J-223X	M.G.RESISTOR	22k 1/16W
R74	NRSA63J-223X	M.G.RESISTOR	22k 1/16W
R75	NRSA63J-223X	M.G.RESISTOR	22k 1/16W
R76	NRSA63J-223X	M.G.RESISTOR	22k 1/16W
R77	NRSA63J-223X	M.G.RESISTOR	22k 1/16W
R78	NRSA63J-223X	M.G.RESISTOR	22k 1/16W
R79	NRSA63J-223X	M.G.RESISTOR	22k 1/16W
R80	NRSA63J-103X	M.G.RESISTOR	10k 1/16W
C1	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C2	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C3	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C15	NBE21AM-106X	TAN.CAPACITOR	10 10V
C16	NBE21AM-106X	TAN.CAPACITOR	10 10V
C19	NEH91CM-106X	E.CAPACITOR	10 16V
C20	NBE21CM-475X	TAN.CAPACITOR	4.7 16V
C26	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C27	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C30	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C33	NCB31CK-473X	CER.CAPACITOR	0.047 16V
C37	NCB31CK-473X	CER.CAPACITOR	0.047 16V
CN2	SCV0500-001	CONNECTOR	30PIN
CN12	SCV2644-110W	CONNECTOR	10PIN
CN13	SCV2644-120X	CONNECTOR	20PIN
CN17	SSV1591-L05	CONNECTOR	5PIN
CN19	SCV1770-013	CONNECTOR	13PIN
CN22	SCV2808-050	CONNECTOR	50PIN
CN23	SCV2808-050	CONNECTOR	50PIN
CN24	SCV1770-007	CONNECTOR	7PIN
CN26	SCV1770-004	CONNECTOR	4PIN
CN27	PGZ01938-020Z	CONNECTOR	20PIN
CN28	PGZ01938-024Z	CONNECTOR	24PIN
CN29	SCV0500-001	CONNECTOR	30PIN
CN30	SCV0500-001	CONNECTOR	30PIN
CN31	SCV0500-001	CONNECTOR	30PIN
CN32	SCV0500-001	CONNECTOR	30PIN
CN34	SCV2644-126X	CONNECTOR	26PIN
CN35	SCV2644-120X	CONNECTOR	20PIN
CN36	SCV1770-012	CONNECTOR	12PIN
CN37	SCV1770-005	CONNECTOR	5PIN
CN44	SCV1770-003	CONNECTOR	3PIN
K4	SCV2662-027	FERRITE BEADS	
K6	SCV2662-027	FERRITE BEADS	
K7	SCV2662-027	FERRITE BEADS	
SWR1	SCV2823-002	SW. REG ASSEMBLY	

5.2 TG BOARD ASSEMBLY LIST [0][2]

SCK2477-01-N0A

SCK2477-01-P0A [0][2]□□□□□□

Symbol No.	Part No.	Part Name	Description	
IC1	JCS0028	I.C.(M)	JVC	
IC2	UPD9438BGK-BE9	I.C.(M)	NEC	
IC3	TC74HC04AF-X	I.C.(M)	TOSHIBA	
IC4	TC7SU04F-X	I.C.(M)	TOSHIBA	
IC5	TC7SU04F-X	I.C.(M)	TOSHIBA	
IC6	TC74VHC08FS-X	I.C.(M)	TOSHIBA	
IC7	TC7SH08FU-X	I.C.(M)	TOSHIBA	
IC8	TC7SH32FU-X	I.C.(M)	TOSHIBA	
IC9	TC7SH32FU-X	I.C.(M)	TOSHIBA	
IC10	TC7SH86FU-X	I.C.(M)	TOSHIBA	
IC11	TC7SH32FU-X	I.C.(M)	TOSHIBA	
IC12	TC7S04F-X	I.C.(M)	TOSHIBA	
IC13	TC7SH32FU-X	I.C.(M)	TOSHIBA	
IC14	TC7S02F-X	I.C.(M)	TOSHIBA	
D1	MA335-X	DIODE	MATSUSHITA	
D2	MA335-X	DIODE	MATSUSHITA	
R1	NRSA63J-102X	M.G.RESISTOR	1k	1/16W
R2	NRSA63J-102X	M.G.RESISTOR	1k	1/16W
R4	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R5	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R6	NRSA63J-102X	M.G.RESISTOR	1k	1/16W
R7	NRSA63J-102X	M.G.RESISTOR	1k	1/16W
R8	NRSA63J-102X	M.G.RESISTOR	1k	1/16W
R9	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R10	NRSA63J-562X	M.G.RESISTOR	5.6k	1/16W
R11	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R12	NRSA63J-183X	M.G.RESISTOR	18k	1/16W
R13	NRSA63J-102X	M.G.RESISTOR	1k	1/16W
R14	NRSA63J-102X	M.G.RESISTOR	1k	1/16W
R16	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R17	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R18	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W(E)
R19	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R20	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R21	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R24	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R26	NRSA63J-105X	M.G.RESISTOR	1M	1/16W
R27	NRSA63J-271X	M.G.RESISTOR	270	1/16W
R28	NRSA63J-221X	M.G.RESISTOR	220	1/16W
R29	NRSA63J-104X	M.G.RESISTOR	100k	1/16W
R30	NRSA63J-104X	M.G.RESISTOR	100k	1/16W
R31	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R32	NRSA63J-104X	M.G.RESISTOR	100k	1/16W
R33	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R34	NRSA63J-220X	M.G.REGISTOR	22	1/16W
R35	NRSA63J-101X	M.G.RESISTOR	100	1/16W
R36	NRSA63J-101X	M.G.RESISTOR	100	1/16W
R37	NRSA63J-220X	M.G.RESISTOR	22	1/16W
R38	NRSA63J-330X	M.G.RESISTOR	33	1/16W
R39	NRSA63J-330X	M.G.RESISTOR	33	1/16W
R40	NRSA63J-330X	M.G.RESISTOR	33	1/16W
R41	NRSA63J-331X	M.G.RESISTOR	330	1/16W
R42	NRSA63J-101X	M.G.RESISTOR	100	1/16W
R43	NRSA63J-561X	M.G.RESISTOR	560	1/16W
R44	NRSA63J-181X	M.G.RESISTOR	180	1/16W
R45	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W(E)

Symbol No.	Part No.	Part Name	Description	
R46	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R47	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R48	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R49	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R51	NRSA63J-471X	M.G.RESISTOR	470	1/16W
R53	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R54	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R55	NRSA63J-102X	M.G.RESISTOR	1k	1/16W
R56	NRSA63J-151X	M.G.RESISTOR	150	1/16W
R58	NRSA63J-392X	M.G.RESISTOR	3.9k	1/16W
R59	NRSA63J-392X	M.G.RESISTOR	3.9k	1/16W
R60	NRSA63J-392X	M.G.RESISTOR	3.9k	1/16W
VR8	NVP1416-203X	TRIM.RESISTOR	Eoo	20k
C1	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C2	NEH90JM-336X	E.CAPACITOR	33	6.3V
C3	NEH90JM-336X	E.CAPACITOR	33	6.3V
C4	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C5	NEA60JM-337X	E.CAPACITOR	330	6.3V
C6	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C7	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C8	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C9	NDC31HJ-270X	CER.CAPACITOR	27p	50V
C10	NDC31HJ-270X	CER.CAPACITOR	27p	50V
C11	NDC31HJ-270X	CER.CAPACITOR	27p	50V
C12	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C13	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C15	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C16	NDC31HJ-121X	CER.CAPACITOR	120p	50V
C17	NDC31HJ-121X	CER.CAPACITOR	120p	50V
C18	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C19	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C20	NBE21EM-105X	TAN.CAPACITOR	1	25V
C21	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C22	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C23	NDC31HJ-270X	CER.CAPACITOR	27p	50V
C24	NDC31HJ-270X	CER.CAPACITOR	27p	50V
C25	NBE21EM-105X	TAN.CAPACITOR	1	25V
C26	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C27	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C30	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C31	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C32	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C33	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C34	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C35	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C36	NCB31CK-473X	CER.CAPACITOR	0.047	16V
L1	NQL124K-150X	COIL	15μH	
L2	NQL124K-150X	COIL	15μH	
X1	CE41081-A0A	CRYSTAL	28.636MHz	(U)
	CE41212-001	CRYSTAL	28.375MHz	(E)
CN9	SCV1814-026X	CONNECTOR	26PIN	

[TG]

Symbol No.	Part No.	Part Name	Description
CN10	SCV1770-005	CONNECTOR	5PIN
CN19	SCV1770-013	CONNECTOR	13PIN
CN21	SCV1770-014	CONNECTOR	14PIN
CN33	SSV2416-103Z	CONNECTOR	3PIN
TP1	SCV1880-001	TEST POINT	
K1 - K16	SCV2662-027	FERRITE BEADS	

5.3 DR BOARD ASSEMBLY LIST [0][3]

SCK2477-02-00A [0][3]□□□□□□

Symbol No.	Part No.	Part Name	Description	
IC1	TC74HC04AF-X	I.C.(M)	TOSHIBA	
IC101	UPD16510GR-X	I.C.(M)	NEC	
IC102	UPD16510GR-X	I.C.(M)	NEC	
IC201	UPD16510GR-X	I.C.(M)	NEC	
IC202	UPD16510GR-X	I.C.(M)	NEC	
IC301	UPD16510GR-X	I.C.(M)	NEC	
IC302	UPD16510GR-X	I.C.(M)	NEC	
Q1	2SD1820/QR/-X	TRANSISTOR	MATSUSHITA	
Q2	2SD1820/QR/-X	TRANSISTOR	MATSUSHITA	
Q3	2SD1820/QR/-X	TRANSISTOR	MATSUSHITA	
Q4	2SB1219/QR/-X	TRANSISTOR	MATSUSHITA	
Q5	2SB1219/QR/-X	TRANSISTOR	MATSUSHITA	
Q101	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q102	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q103	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q104	2SA1462/3-4/-X	TRANSISTOR	NEC	
Q105	2SC3735/4-5/-X	TRANSISTOR	NEC	
Q201	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q202	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q203	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q204	2SA1462/3-4/-X	TRANSISTOR	NEC	
Q205	2SC3735/4-5/-X	TRANSISTOR	NEC	
Q301	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q302	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q303	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q304	2SA1462/3-4/-X	TRANSISTOR	NEC	
Q305	2SC3735/4-5/-X	TRANSISTOR	NEC	
D1	MA142WA-X	DIODE	MATSUSHITA	
D2	MA142A-X	DIODE	MATSUSHITA	
D5	MA142WA-X	DIODE	MATSUSHITA	
D101	MA142WA-X	DIODE	MATSUSHITA	
D102	MA742-X	DIODE	MATSUSHITA	
D103	MA742-X	DIODE	MATSUSHITA	
D104	MA142A-X	DIODE	MATSUSHITA	
D105	MA143A-X	DIODE	MATSUSHITA	
D201	MA142WA-X	DIODE	MATSUSHITA	
D202	MA742-X	DIODE	MATSUSHITA	
D203	MA742-X	DIODE	MATSUSHITA	
D204	MA142WA-X	DIODE	MATSUSHITA	
D205	MA143A-X	DIODE	MATSUSHITA	
D301	MA142WA-X	DIODE	MATSUSHITA	
D302	MA742-X	DIODE	MATSUSHITA	
D303	MA742-X	DIODE	MATSUSHITA	
D305	MA143A-X	DIODE	MATSUSHITA	
R1	NRSA63J-822X	M.G.RESISTOR	8.2k	1/16W
R2	NRSA63J-123X	M.G.RESISTOR	12k	1/16W
R3	NRSA63J-100X	M.G.RESISTOR	10	1/16W
R4	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R5	NRSA63J-222X	M.G.RESISTOR	2.2k	1/16W
R6	NRSA63J-153X	M.G.RESISTOR	15k	1/16W
R7	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R8	NRSA63J-822X	M.G.RESISTOR	8.2k	1/16W
R9	NRSA63J-123X	M.G.RESISTOR	12k	1/16W
R10	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R11	NRSA63J-393X	M.G.RESISTOR	39k	1/16W
R12	NRSA63J-333X	M.G.RESISTOR	33k	1/16W

Symbol No.	Part No.	Part Name	Description	
R13	NRSA63J-563X	M.G.RESISTOR	56k	1/16W
R14	NRSA63J-333X	M.G.RESISTOR	33k	1/16W
R15	NRSA63J-472X	M.G.RESISTOR	4.7k	1/16W
R16	NRSA63J-183X	M.G.RESISTOR	18k	1/16W
R17	NRSA63J-221X	M.G.RESISTOR	220	1/16W
R18	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R19	NRSA63J-4R7X	M.G.RESISTOR	4.7	1/16W
R20	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R21	NRSA63J-102X	M.G.RESISTOR	1k	1/16W
R22	NRSA63J-220X	M.G.RESISTOR	22	1/16W
R23	NRSA63J-220X	M.G.RESISTOR	22	1/16W
R24	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R25	NRSA63J-104X	M.G.RESISTOR	100k	1/16W
R26	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R28	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R30	NRSA63J-220X	M.G.RESISTOR	22	1/16W
R104	NRSA63J-823X	M.G.RESISTOR	82k	1/16W
R105	NRSA63J-472X	M.G.RESISTOR	4.7k	1/16W
R106	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R107	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R108	NRSA63J-105X	M.G.RESISTOR	1M	1/16W
R109	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R110	NRSA63J-100X	M.G.RESISTOR	10	1/16W
R111	NRSA63J-100X	M.G.RESISTOR	10	1/16W
R112	NRSA63J-104X	M.G.RESISTOR	100k	1/16W
R204	NRSA63J-823X	M.G.RESISTOR	82k	1/16W
R205	NRSA63J-472X	M.G.RESISTOR	4.7k	1/16W
R206	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R207	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R208	NRSA63J-105X	M.G.RESISTOR	1M	1/16W
R209	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R210	NRSA63J-100X	M.G.RESISTOR	10	1/16W
R211	NRSA63J-100X	M.G.RESISTOR	10	1/16W
R212	NRSA63J-822X	M.G.RESISTOR	8.2k	1/16W
R213	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R214	NRSA63J-104X	M.G.RESISTOR	100k	1/16W
R215	NRSA63J-104X	M.G.RESISTOR	100k	1/16W
R304	NRSA63J-823X	M.G.RESISTOR	82k	1/16W
R305	NRSA63J-472X	M.G.RESISTOR	4.7k	1/16W
R306	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R307	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R308	NRSA63J-105X	M.G.RESISTOR	1M	1/16W
R309	NRSA63J-103X	M.G.RESISTOR	10k	1/16W
R310	NRSA63J-100X	M.G.RESISTOR	10	1/16W
R311	NRSA63J-100X	M.G.RESISTOR	10	1/16W
C1	NBE21CM-225X	TAN.CAPACITOR	2.2	16V
C2	NEH90JM-107X	E.CAPACITOR	100	6.3V
C3	NEH90JM-107X	E.CAPACITOR	100	6.3V
C4	NEA60JM-337X	E.CAPACITOR	330	6.3V
C5	NEA60JM-337X	E.CAPACITOR	330	6.3V
C6	NEH91CM-106X	E.CAPACITOR	10	16V
C7	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C8	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C9	NBE21CM-225X	TAN.CAPACITOR	2.2	16V
C10	NBE40GM-476X	TAN.CAPACITOR	47	
C11	NEH91CM-106X	E.CAPACITOR	10	16V
C12	NBE21EM-105X	TAN.CAPACITOR	1	25V
C13	NEH91CM-476X	E.CAPACITOR	47	16V

Symbol No.	Part No.	Part Name	Description	
C14	NEA61AM-227X	E.CAPACITOR	220	10V
C15	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C18	NEH90JM-336X	E.CAPACITOR	33	6.3V
C20	NCB11CK-105X	CER.CAPACITOR	1	16V
C21	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C22	NBE20JM-106X	TAN.CAPACITOR	10	6.3V
C23	NBE21CM-225X	TAN.CAPACITOR	2.2	16V
C24	NBE41CM-156X	TAN.CAPACITOR	15	16V
C101	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C102	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C103	NCB31EK-103X	CER.CAPACITOR	0.01	25V
C104	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C105	NCB31EK-103X	CER.CAPACITOR	0.01	25V
C106	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C107	NEH91HM-105X	E.CAPACITOR	1	50V
C108	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C109	NDC31HJ-5R0X	CER.CAPACITOR	5p	50V
C110	NDC31HJ-5R0X	CER.CAPACITOR	5p	50V
C111	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C113	NCB31EK-103X	CER.CAPACITOR	0.01	25V
C201	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C202	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C203	NCB31EK-103X	CER.CAPACITOR	0.01	25V
C204	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C205	NCB31EK-103X	CER.CAPACITOR	0.01	25V
C206	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C207	NEH91HM-105X	E.CAPACITOR	1	50V
C208	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C209	NDC31HJ-5R0X	CER.CAPACITOR	5p	50V
C210	NDC31HJ-5R0X	CER.CAPACITOR	5p	50V
C211	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C212	NBE21EM-105X	TAN.CAPACITOR	1	25V
C213	NCB31EK-103X	CER.CAPACITOR	0.01	25V
C301	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C302	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C303	NCB31EK-103X	CER.CAPACITOR	0.01	25V
C304	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C305	NCB31EK-103X	CER.CAPACITOR	0.01	25V
C306	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C307	NEH91HM-105X	E.CAPACITOR	1	50V
C308	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C309	NDC31HJ-5R0X	CER.CAPACITOR	5p	50V
C310	NDC31HJ-5R0X	CER.CAPACITOR	5p	50V
C311	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C312	NEH61EM-106X	E.CAPACITOR	10	25V
C313	NCB31EK-103X	CER.CAPACITOR	0.01	25V
C314	NEH91CM-106X	E.CAPACITOR	10	16V
CN6	SCV2644-124X	CONNECTOR	24PIN	
CN7	SCV2644-124X	CONNECTOR	24PIN	
CN8	SCV2644-124X	CONNECTOR	24PIN	
CN9	SCV1815-026X	CONNECTOR	26PIN	
K1 – K34	SCV2662-027	FERRITE BEADS		

5.4 ISB/ISG/ISR BOARD ASSEMBLY LIST [0][4]/[0][5]/[0][6]

SCK2477-03-00A (ISB) [0][4][ ][ ][ ][ ][ ][ ]

SCK2477-04-00A (ISG) [0][5][ ][ ][ ][ ][ ][ ]

SCK2477-05-00A (ISR) [0][6][ ][ ][ ][ ][ ][ ]

Symbol No.	Part No.	Part Name	Description	
IC1	UPD3602D-10	I.C.(M)	NEC	
SK1	SCV2769-001	IC SOCKET	for IC1	
IC2	TC74HC04AF-X	I.C.(M)	TOSHIBA	
IC3	AD8011AR-X	I.C.(M)	ANALOG DEVICES	
IC4	OPA655U-XE	I.C.(M)	BBJ	
IC5	LMC6082IM-X	I.C.(M)	NATIONAL SEMICO	
IC7	AD603AR-X	I.C.(M)	ANALOG DEVICES	
IC8	TC4S66F-X	I.C.(M)	TOSHIBA	
Q1	2SA1226T2B	TRANSISTOR	NEC	
Q2	3SK157/4-6/-W	FET	NEC	
Q3	3SK157/4-6/-W	FET	NEC	
Q4	3SK157/4-6/-W	FET	NEC	
Q5	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q6	3SK157/4-6/-W	FET	NEC	
Q7	DTA124EUA-X	TRANSISTOR	ROHM	
Q8	DTC124EUA-X	TRANSISTOR	ROHM	
Q101	2SJ364/QR/-X	FET	MATSUSHITA	
D1	HSM198S-W	DIODE	HITACHI	
R1	NRSA63F-220X-T	M.G.RESISTOR	22	1/16W
R2	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R3	NRSA63F-105X-T	M.G.RESISTOR	1M	1/16W
R4	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R5	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R6	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R7	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R8	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R9	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R11	NRSA63J-0R0X	M.G.RESISTOR	0 (for ISB/G)	1/16W
R13	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R14	NRSA63F-224X-T	M.G.RESISTOR	220k	1/16W
R15	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R16	NRSA63F-391X-T	M.G.RESISTOR	390 (for ISB/R)	1/16W
	NRSA63F-471X-T	M.G.RESISTOR	470 (for ISG)	1/16W
R18	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R19	NRSA63F-181X-T	M.G.RESISTOR	180	1/16W
R20	NRSA63F-181X-T	M.G.RESISTOR	180	1/16W
R21	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R22	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R23	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R24	NRSA63F-122X-T	M.G.RESISTOR	1.2k	1/16W
R25	NRSA63F-822X-T	M.G.RESISTOR	8.2k (for ISB)	1/16W
	NRSA63F-152X-T	M.G.RESISTOR	1.5k (for ISG)	1/16W
	NRSA63F-222X-T	M.G.RESISTOR	2.2k (for ISR)	1/16W
R26	NRSA63F-102X-T	M.G.RESISTOR	1k (for ISB)	1/16W
	NRSA63J-0R0X	M.G.RESISTOR	0 (for ISG)	1/16W
	NRSA63F-151X-T	M.G.RESISTOR	150 (for ISR)	1/16W
R27	NRSA63J-105X	M.G.RESISTOR	1M	1/16W
R28	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R29	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W
R30	NRSA63J-105X	M.G.RESISTOR	1M	1/16W
R31	NRSA63F-563X-T	M.G.RESISTOR	56k	1/16W
R32	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W

Symbol No.	Part No.	Part Name	Description	
R33	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R34	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R101	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R102	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
C1	NBE21AM-106X	TAN.CAPACITOR	10	10V
C2	NBE21AM-106X	TAN.CAPACITOR	10	10V
C3	NBE21EM-105X	TAN.CAPACITOR	1	25V
C6	NBE21CM-225X	TAN.CAPACITOR	2.2	16V
C7	NEE51VM-335NY	E.CAPACITOR	3.3	35V
C8	NCB31EK-103X	CER.CAPACITOR	0.01	25V
C9	NCB31EK-103X	CER.CAPACITOR	0.01	25V
C10	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C11	NDC31HJ-680X	CER.CAPACITOR	68p	50V
C12	NBE21CM-225X	TAN.CAPACITOR	2.2	16V
C13	NBE21CM-225X	TAN.CAPACITOR	2.2	16V
C14	NDC31HJ-150X	CER.CAPACITOR	15p	50V
C15	NDC31HJ-150X	CER.CAPACITOR	15p	50V
C16	NBE21CM-225X	TAN.CAPACITOR	2.2	16V
C17	NBE21CM-225X	TAN.CAPACITOR	2.2	16V
C19	NBE21CM-225X	TAN.CAPACITOR	2.2	16V
C20	NBE21CM-225X	TAN.CAPACITOR	2.2	16V
C21	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C22	NCB31CK-823X	CER.CAPACITOR	0.082	16V
C23	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C24	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C25	NDC31HJ-100X	CER.CAPACITOR	10p (for ISB)	50V
	NDC31HJ-151X	CER.CAPACITOR	150p (for ISR)	50V
C101	NDC31HJ-680X	CER.CAPACITOR	68p (for ISB/R)	50V
CN3	SCV1770-005	CONNECTOR	5PIN (for ISB)	
CN4	SCV1770-005	CONNECTOR	5PIN (for ISG)	
CN5	SCV1770-005	CONNECTOR	5PIN (for ISR)	
CN6	SCV2477-024	CONNECTOR	24PIN (for ISB)	
CN7	SCV2644-124X	CONNECTOR	24PIN (for ISG)	
CN8	SCV2477-024	CONNECTOR	24PIN (for ISR)	
LC101	SCV2596-S144Z	FILTER	14MHz	
K1	SCV2662-027	FERRITE BEADS		
K3	SCV2662-027	FERRITE BEADS		
K4	SCV2662-027	FERRITE BEADS		
K5	SCV2662-027	FERRITE BEADS		

5.5 PA BOARD ASSEMBLY LIST [0][7]

SCK2477-06-00A [0][7]□□□□□□

Symbol No.	Part No.	Part Name	Description	
IC1	MB88345PF	I.C.(M)	FUJITSU	
IC2	TC7S08F-X	I.C.(M)	TOSHIBA	
IC101	AD8011AR-X	I.C.(M)	ANALOG DEVICES	
IC102	TC4W53F-X	I.C.(M)	TOSHIBA	
IC103	AD8041AR-XE	I.C.(M)	ANALOG DEVICES	
IC106	NJM062M-X	I.C.(M)	JRC	
IC107	TC4S66F-X	I.C.(M)	TOSHIBA	
IC108	NJM062M-X	I.C.(M)	JRC	
IC201	AD8011AR-X	I.C.(M)	ANALOG DEVICES	
IC202	TC4W53F-X	I.C.(M)	TOSHIBA	
IC203	AD8041AR-XE	I.C.(M)	ANALOG DEVICES	
IC207	TC4S66F-X	I.C.(M)	TOSHIBA	
IC208	NJM062M-X	I.C.(M)	JRC	
IC301	AD8011AR-X	I.C.(M)	ANALOG DEVICES	
IC302	TC4W53F-X	I.C.(M)	TOSHIBA	
IC303	AD8041AR-XE	I.C.(M)	ANALOG DEVICES	
IC306	NJM062M-X	I.C.(M)	JRC	
IC307	TC4S66F-X	I.C.(M)	TOSHIBA	
IC308	NJM062M-X	I.C.(M)	JRC	
Q1	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q2	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q3	DTA124EUA-X	TRANSISTOR	ROHM	
Q4	2SB1219/QR/-X	TRANSISTOR	MATSUSHITA	
Q5	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA	
Q6	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q101	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA	
Q102	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA	
Q103	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q104	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA	
Q105	2SJ364/QR/-X	FET	MATSUSHITA	
Q106	DTC124EUA-X	TRANSISTOR	ROHM	
Q201	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA	
Q202	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA	
Q203	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q204	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA	
Q205	2SJ364/QR/-X	FET	MATSUSHITA	
Q206	DTC124EUA-X	TRANSISTOR	ROHM	
Q301	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA	
Q302	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA	
Q303	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q304	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA	
Q305	2SJ364/QR/-X	FET	MATSUSHITA	
Q306	DTC124EUA-X	TRANSISTOR	ROHM	
D102	MA742-X	DIODE	MATSUSHITA	
D103	MA111-X	DIODE	MATSUSHITA	
D104	MA111-X	DIODE	MATSUSHITA	
D202	MA742-X	DIODE	MATSUSHITA	
D203	MA111-X	DIODE	MATSUSHITA	
D204	MA111-X	DIODE	MATSUSHITA	
D302	MA742-X	DIODE	MATSUSHITA	
D303	MA111-X	DIODE	MATSUSHITA	
D304	MA111-X	DIODE	MATSUSHITA	
R1	NRSA63F-562X-T	M.G.RESISTOR	5.6k	1/16W
R2	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W
R3	NRSA63F-392X-T	M.G.RESISTOR	3.9k	1/16W
R4	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W

Symbol No.	Part No.	Part Name	Description	
R5	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R6	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R7	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R8	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R11	NRSA63F-393X-T	M.G.RESISTOR	39k	1/16W
R12	NRSA63F-682X-T	M.G.RESISTOR	6.8k	1/16W
R23	NRSA63F-122X-T	M.G.RESISTOR	1.2k	1/16W
R24	NRSA63F-122X-T	M.G.RESISTOR	1.2k	1/16W
R25	NRSA63F-563X-T	M.G.RESISTOR	56k	1/16W
R26	NRSA63F-273X-T	M.G.RESISTOR	27k	1/16W
R101	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R102	NRSA63F-471X-T	M.G.RESISTOR	470	1/16W
R103	NRSA63F-271X-T	M.G.RESISTOR	270	1/16W
R104	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R105	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R106	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R107	NRSA63F-681X-T	M.G.RESISTOR	680	1/16W
R108	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R109	NRSA63F-680X-T	M.G.RESISTOR	68	1/16W
R110	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R113	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R114	NRSA63F-220X-T	M.G.RESISTOR	22	1/16W
R115	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R116	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R117	NRSA63F-181X-T	M.G.RESISTOR	180	1/16W
R135	NRSA63F-274X-T	M.G.RESISTOR	270k	1/16W
R136	NRSA63F-274X-T	M.G.RESISTOR	270k	1/16W
R137	NRSA63F-124X-T	M.G.RESISTOR	120k	1/16W
R138	NRSA63F-224X-T	M.G.RESISTOR	220k	1/16W
R139	NRSA63F-124X-T	M.G.RESISTOR	120k	1/16W
R140	NRSA63F-183X-T	M.G.RESISTOR	18k	1/16W
R141	NRSA63F-274X-T	M.G.RESISTOR	270k	1/16W
R142	NRSA63F-363X-T	M.G.RESISTOR	36k	1/16W
R143	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R144	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R145	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R146	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W
R147	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W
R148	NRSA63F-822X-T	M.G.RESISTOR	8.2k	1/16W
R149	NRSA63F-243X-T	M.G.RESISTOR	24k	1/16W
R150	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R151	NRSA63F-752X-T	M.G.RESISTOR	7.5k	1/16W
R152	NRSA63F-822X-T	M.G.RESISTOR	8.2k	1/16W
R153	NRSA63F-823X-T	M.G.RESISTOR	82k	1/16W
R154	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R155	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R156	NRSA63F-304X-T	M.G.RESISTOR	300k	1/16W
R157	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R158	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R159	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R161	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R164	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R165	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R166	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R201	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R202	NRSA63F-471X-T	M.G.RESISTOR	470	1/16W
R203	NRSA63F-271X-T	M.G.RESISTOR	270	1/16W
R204	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R205	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W

[PA]

Symbol No.	Part No.	Part Name	Description	
R206	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R207	NRSA63F-681X-T	M.G.RESISTOR	680	1/16W
R208	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R209	NRSA63F-680X-T	M.G.RESISTOR	68	1/16W
R210	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R213	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R214	NRSA63F-220X-T	M.G.RESISTOR	22	1/16W
R215	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R216	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R217	NRSA63F-181X-T	M.G.RESISTOR	180	1/16W
R236	NRSA63F-274X-T	M.G.RESISTOR	270k	1/16W
R237	NRSA63F-124X-T	M.G.RESISTOR	120k	1/16W
R238	NRSA63F-334X-T	M.G.RESISTOR	330k	1/16W
R239	NRSA63F-124X-T	M.G.RESISTOR	120k	1/16W
R240	NRSA63F-183X-T	M.G.RESISTOR	18k	1/16W
R241	NRSA63F-274X-T	M.G.RESISTOR	270k	1/16W
R242	NRSA63F-363X-T	M.G.RESISTOR	36k	1/16W
R243	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R244	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R245	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R246	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W
R247	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W
R248	NRSA63F-822X-T	M.G.RESISTOR	8.2k	1/16W
R249	NRSA63F-393X-T	M.G.RESISTOR	39k	1/16W
R250	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R251	NRSA63F-752X-T	M.G.RESISTOR	7.5k	1/16W
R252	NRSA63F-123X-T	M.G.RESISTOR	12k	1/16W
R253	NRSA63F-273X-T	M.G.RESISTOR	27k	1/16W
R254	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R255	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R256	NRSA63F-334X-T	M.G.RESISTOR	330k	1/16W
R257	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R258	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R259	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R261	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R264	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R265	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R266	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R301	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R302	NRSA63F-471X-T	M.G.RESISTOR	470	1/16W
R303	NRSA63F-271X-T	M.G.RESISTOR	270	1/16W
R304	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R305	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R306	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R307	NRSA63F-681X-T	M.G.RESISTOR	680	1/16W
R308	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R309	NRSA63F-680X-T	M.G.RESISTOR	68	1/16W
R310	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R313	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R314	NRSA63F-220X-T	M.G.RESISTOR	22	1/16W
R315	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R316	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R317	NRSA63F-181X-T	M.G.RESISTOR	180	1/16W
R335	NRSA63F-274X-T	M.G.RESISTOR	270k	1/16W
R336	NRSA63F-274X-T	M.G.RESISTOR	270k	1/16W
R337	NRSA63F-124X-T	M.G.RESISTOR	120k	1/16W
R338	NRSA63F-224X-T	M.G.RESISTOR	220k	1/16W
R339	NRSA63F-124X-T	M.G.RESISTOR	120k	1/16W
R340	NRSA63F-183X-T	M.G.RESISTOR	18k	1/16W

Symbol No.	Part No.	Part Name	Description	
R341	NRSA63F-274X-T	M.G.RESISTOR	270k	1/16W
R342	NRSA63F-363X-T	M.G.RESISTOR	36k	1/16W
R343	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R344	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R345	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R346	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W
R347	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W
R348	NRSA63F-822X-T	M.G.RESISTOR	8.2k	1/16W
R349	NRSA63F-183X-T	M.G.RESISTOR	18k	1/16W
R350	NRSA63F-183X-T	M.G.RESISTOR	18k	1/16W
R351	NRSA63F-752X-T	M.G.RESISTOR	7.5k	1/16W
R352	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R353	NRSA63J-105X	M.G.RESISTOR	1M	1/16W
R354	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R355	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R356	NRSA63F-304X-T	M.G.RESISTOR	300k	1/16W
R357	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R358	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R359	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R361	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R364	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R365	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R366	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
C1	NBE41CM-106X	TAN.CAPACITOR	10	16V
C2	NBE21AM-106X	TAN.CAPACITOR	10	10V
C3	NBE21AM-106X	TAN.CAPACITOR	10	10V
C5	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C6	NBE41AM-226X	TAN.CAPACITOR	22	10V
C7	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C9	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C103	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C104	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C105	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C106	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C112	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C113	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C114	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C115	NDC31HJ-680X	CER.CAPACITOR	68p	50V
C203	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C204	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C205	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C206	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C212	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C213	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C214	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C215	NDC31HJ-680X	CER.CAPACITOR	68p	50V
C303	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C304	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C305	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C306	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C312	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C313	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C314	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C315	NDC31HJ-680X	CER.CAPACITOR	68p	50V
LC101	SCV2597-S144Z	FILTER	14MHz	
LC201	SCV2597-S144Z	FILTER	14MHz	

5.6 DPR1 BOARD ASSEMBLY LIST [0][8]

SCK2482-00A

SCK2482-P0A [0][8]□□□□□□

Symbol No.	Part No.	Part Name	Description
LC301	SCV2597-S144Z	FILTER	14MHz
CN1	SCV1770-006	CONNECTOR	6PIN
CN3	SCV1770-005	CONNECTOR	5PIN
CN4	SCV1770-005	CONNECTOR	5PIN
CN5	SCV1770-005	CONNECTOR	5PIN
CN21	SCV1770-014	CONNECTOR	14PIN
CN36	SCV1770-012	CONNECTOR	12PIN
TP101	SCV1880-001	TEST POINT	
TP102	SCV1880-001	TEST POINT	
TP201	SCV1880-001	TEST POINT	
TP202	SCV1880-001	TEST POINT	
TP301	SCV1880-001	TEST POINT	
TP302	SCV1880-001	TEST POINT	

Symbol No.	Part No.	Part Name	Description	
IC101	AD8011AR-X	I.C.(M)	ANALOG DEVICES	
IC102	LMC6082IM-X	I.C.(M)	NATIONAL SEMICO	
IC103	ADS820U-X	I.C.(M)	BBJ	
IC201	AD8011AR-X	I.C.(M)	ANALOG DEVICES	
IC202	ADS820U-X	I.C.(M)	BBJ	
IC301	AD8011AR-X	I.C.(M)	ANALOG DEVICES	
IC302	LMC6082IM-X	I.C.(M)	NATIONAL SEMICO	
IC303	ADS820U-X	I.C.(M)	BBJ	
IC401	JCS0039	I.C.(M)	JVC	
IC402	MN47V77S-XE	I.C.(M)	MATSUSHITA	
IC403	MN47V77S-XE	I.C.(M)	MATSUSHITA	
IC404	MN47V77S-XE	I.C.(M)	MATSUSHITA	
IC405	MN47V77S-XE	I.C.(M)	MATSUSHITA	
IC406	HM63021FP-S	I.C.(M)	HITACHI	
IC407	HM63021FP-S	I.C.(M)	HITACHI	
IC408	HM63021FP-S	I.C.(M)	HITACHI	
IC409	HM63021FP-S	I.C.(M)	HITACHI	
IC410	HM63021FP-S	I.C.(M)	HITACHI	
IC501	TC7SH00FU-X	I.C.(M)	TOSHIBA	
IC502	TC74VHC125FS-X	I.C.(M)	TOSHIBA	
IC503	TC74VHC04FS-X	I.C.(M)	TOSHIBA	
IC504	TC74VHC74FS-X	I.C.(M)	TOSHIBA	
IC505	TC74VHC74FS-X	I.C.(M)	TOSHIBA	
IC506	TC74VHC74FS-X	I.C.(M)	TOSHIBA	
IC507	TC74VHC74FS-X	I.C.(M)	TOSHIBA	
IC508	TC74VHC74FS-X	I.C.(M)	TOSHIBA	
IC509	TC74VHC74FS-X	I.C.(M)	TOSHIBA	
IC601	TC74VHCT04FS-X	I.C.(M)	TOSHIBA	
IC602	SN74LS07DB-XE	I.C.(M)	TEXAS	
IC603	TMS57106PCE	I.C.(M)	TEXAS	
IC701	JCS0039	I.C.(M)	JVC	
IC801	TC74VHC574FS-X	I.C.(M)	TOSHIBA	
IC802	TC74VHC125FS-X	I.C.(M)	TOSHIBA	
IC803	TC74VHC175FS-X	I.C.(M)	TOSHIBA	
IC804	TC74VHC574FS-X	I.C.(M)	TOSHIBA	
IC805	TC74VHC574FS-X	I.C.(M)	TOSHIBA	
IC806	TC74VHC574FS-X	I.C.(M)	TOSHIBA	
IC807	TC74VHC574FS-X	I.C.(M)	TOSHIBA	
IC808	CXD2307R-X	I.C.(M)	SONY	
Q101	3SK157/4-6/-W	FET	NEC	
Q201	3SK157/4-6/-W	FET	NEC	
Q301	3SK157/4-6/-W	FET	NEC	
Q302	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA	
Q801	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q802	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q803	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
D101	MA142A-X	DIODE	MATSUSHITA	
D201	MA142A-X	DIODE	MATSUSHITA	
D301	MA142A-X	DIODE	MATSUSHITA	
R102	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W
R104	NRSA63F-392X-T	M.G.RESISTOR	3.9k	1/16W
R105	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R107	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R108	NRSA63F-823X-T	M.G.RESISTOR	82k	1/16W
R109	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R110	NRSA63F-752X-T	M.G.RESISTOR	7.5k	1/16W

[DPR1]

Symbol No.	Part No.	Part Name	Description	
R111	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R112	NRSA63F-470X-T	M.G.RESISTOR	47	1/16W
R113	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R114	NRSA63F-154X-T	M.G.RESISTOR	150k	1/16W
R115	NRSA63F-823X-T	M.G.RESISTOR	82k	1/16W
R116	NRSA63F-393X-T	M.G.RESISTOR	39k	1/16W
R117	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W
R118	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R119	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R120	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W
R126	NRSA63F-682X-T	M.G.RESISTOR	6.8k	1/16W
R202	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W
R204	NRSA63F-392X-T	M.G.RESISTOR	3.9k	1/16W
R205	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R207	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R208	NRSA63F-823X-T	M.G.RESISTOR	82k	1/16W
R209	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R210	NRSA63F-752X-T	M.G.RESISTOR	7.5k	1/16W
R211	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R212	NRSA63F-470X-T	M.G.RESISTOR	47	1/16W
R213	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R214	NRSA63F-154X-T	M.G.RESISTOR	150k	1/16W
R215	NRSA63F-823X-T	M.G.RESISTOR	82k	1/16W
R216	NRSA63F-393X-T	M.G.RESISTOR	39k	1/16W
R217	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W
R218	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R219	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R220	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W
R226	NRSA63F-682X-T	M.G.RESISTOR	6.8k	1/16W
R302	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W
R304	NRSA63F-392X-T	M.G.RESISTOR	3.9k	1/16W
R305	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R307	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R308	NRSA63F-823X-T	M.G.RESISTOR	82k	1/16W
R309	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R310	NRSA63F-752X-T	M.G.RESISTOR	7.5k	1/16W
R311	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R312	NRSA63F-470X-T	M.G.RESISTOR	47	1/16W
R313	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R314	NRSA63F-154X-T	M.G.RESISTOR	150k	1/16W
R315	NRSA63F-823X-T	M.G.RESISTOR	82k	1/16W
R316	NRSA63F-393X-T	M.G.RESISTOR	39k	1/16W
R317	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W
R318	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R319	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R320	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W
R321	NRSA63F-184X-T	M.G.RESISTOR	180k	1/16W
R322	NRSA63F-184X-T	M.G.RESISTOR	180k	1/16W
R323	NRSA63F-682X-T	M.G.RESISTOR	6.8k	1/16W
R324	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R325	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R326	NRSA63F-682X-T	M.G.RESISTOR	6.8k	1/16W
R327	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R328	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R329	NRSA63F-153X-T	M.G.RESISTOR	15k	1/16W
R330	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R401	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R402	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R403	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W

Symbol No.	Part No.	Part Name	Description	
R404	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R405	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R406	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R407	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R408	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R411	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R412	NRSA63F-333X-T	M.G.RESISTOR	33k	1/16W
R413	NRSA63F-183X-T	M.G.RESISTOR	18k	1/16W
R414	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R415	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R416	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R417	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R418	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R419	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R420	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R421	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R422	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R423	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R424	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R425	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R426	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R427	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R428	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R429	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R430	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R431	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R432	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R433	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R434	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R435	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R438	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R439	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R440	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R501	NRSA63F-681X-T	M.G.RESISTOR	680	1/16W
R502	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R504	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R506	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R507	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R508	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R509	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R510	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R511	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R513	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R515	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R517	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R519	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R520	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R521	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R522	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R523	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R526	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R527	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R529	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R531	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R532	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R533	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R534	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R535	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R537	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W(E)

Symbol No.	Part No.	Part Name	Description	
R538	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W(U)
R539	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R540	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R601	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R602	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R603	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R604	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R606	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R607	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R608	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R609	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R610	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R611	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R612	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R613	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R614	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R615	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R618	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R619	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R620	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R621	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R622	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R623	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W(U)
R624	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W(E)
R701	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R702	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R703	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R704	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R705	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R706	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R707	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R708	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R709	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R710	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R711	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R712	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R716	NRSA63F-333X-T	M.G.RESISTOR	33k	1/16W
R717	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R718	NRSA63F-183X-T	M.G.RESISTOR	18k	1/16W
R719	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R720	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R721	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R802	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R804	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R806	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R807	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R809	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R810	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R811	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R812	NRSA63F-391X-T	M.G.RESISTOR	390	1/16W
R813	NRSA63F-561X-T	M.G.RESISTOR	560	1/16W
R814	NRSA63F-391X-T	M.G.RESISTOR	390	1/16W
R815	NRSA63F-561X-T	M.G.RESISTOR	560	1/16W
R816	NRSA63F-391X-T	M.G.RESISTOR	390	1/16W
R817	NRSA63F-561X-T	M.G.RESISTOR	560	1/16W
R819	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R821	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R822	NRSA63F-750X-T	M.G.RESISTOR	75	1/16W
R824	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W

Symbol No.	Part No.	Part Name	Description	
R826	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R827	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R829	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R831	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R832	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R833	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R834	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R835	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R836	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R837	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R838	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
C1	NBE41CM-106X	TAN.CAPACITOR	10	16V
C2	NBE41CM-106X	TAN.CAPACITOR	10	16V
C3	NBE41CM-106X	TAN.CAPACITOR	10	16V
C101	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C102	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C103	NDC31HJ-2R0X	CER.CAPACITOR	2p	50V
C104	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C105	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C106	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C107	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C108	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C109	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C111	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C113	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C114	NDC31HJ-221X	CER.CAPACITOR	220p	50V
C118	NBE51AM-476X	TAN.CAPACITOR	47	10V
C119	NBE51AM-476X	TAN.CAPACITOR	47	10V
C201	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C202	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C203	NDC31HJ-2R0X	CER.CAPACITOR	2p	50V
C204	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C205	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C206	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C207	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C208	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C209	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C211	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C213	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C214	NDC31HJ-221X	CER.CAPACITOR	220p	50V
C218	NBE51AM-476X	TAN.CAPACITOR	47	10V
C219	NBE51AM-476X	TAN.CAPACITOR	47	10V
C301	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C302	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C303	NDC31HJ-2R0X	CER.CAPACITOR	2p	50V
C304	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C305	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C306	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C307	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C308	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C309	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C311	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C313	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C314	NDC31HJ-221X	CER.CAPACITOR	220p	50V
C315	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C317	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C318	NBE51AM-476X	TAN.CAPACITOR	47	10V
C319	NBE51AM-476X	TAN.CAPACITOR	47	10V

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Symbol No.	Part No.	Part Name	Description	
C401	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C402	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C403	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C404	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C405	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C406	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C407	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C408	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C409	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C410	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C411	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C412	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C413	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C414	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C415	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C416	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C417	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C418	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C419	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C420	NDC31HJ-102X	CER.CAPACITOR	1000p	50V
C421	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C422	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C423	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C424	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C501	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C502	NDC31HJ-221X	CER.CAPACITOR	220p	50V
C503	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C504	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C505	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C506	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C507	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C508	NDC31HJ-100X	CER.CAPACITOR	10p	50V
C509	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C510	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C511	NDC31HJ-100X	CER.CAPACITOR	10p	50V
C512	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C513	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C514	NDC31HJ-100X	CER.CAPACITOR	10p	50V
C601	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C602	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C603	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C604	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C605	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C606	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C607	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C608	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C609	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C610	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C611	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C612	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C613	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C614	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C615	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C616	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C617	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C618	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C619	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C620	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C621	NCB31CK-473X	CER.CAPACITOR	0.047	16V

Symbol No.	Part No.	Part Name	Description	
C622	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C623	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C624	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C625	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C701	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C702	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C703	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C704	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C705	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C706	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C707	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C709	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C710	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C711	NDC31HJ-102X	CER.CAPACITOR	1000p	50V
C712	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C713	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C714	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C715	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C716	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C717	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C801	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C802	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C803	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C804	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C805	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C806	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C807	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C808	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C809	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C810	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C811	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C812	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C813	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C814	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C815	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C816	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C817	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C818	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C819	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C820	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C821	NDC31HJ-220X	CER.CAPACITOR	22P	50V
C822	NDC31HJ-220X	CER.CAPACITOR	22P	50V
C823	NDC31HJ-220X	CER.CAPACITOR	22P	50V
LC101	SCV2824-001W	LC FILTER	10MHz	
LC201	SCV2824-001W	LC FILTER	10MHz	
LC301	SCV2824-001W	LC FILTER	10MHz	
CN1	SCV1770-006	CONNECTOR	6PIN	
CN22	SCV2809-050	CONNECTOR	50PIN	
CN23	SCV2809-050	CONNECTOR	50PIN	
CN25	SCV1770-009	CONNECTOR	9PIN	
CN33	SCV1770-003	CONNECTOR	3PIN	
CN100	SCV2810-050	CONNECTOR	50PIN	
CN101	SCV2810-050	CONNECTOR	50PIN	
TP1 – TP503	SCV1880-001	TEST POINT		
K1 – K802	SCV2662-027	FERRITE BEADS		

5.7 DPR2 BOARD ASSEMBLY LIST [0][9]

SCK2480-02-00A

[0][9]□□□□□□

Symbol No.	Part No.	Part Name	Description	
R77	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R78	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R79	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R80	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R81	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R82	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R83	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R84	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R85	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R86	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R87	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R88	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R89	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R90	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R91	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R92	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R93	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R94	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R95	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R96	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R97	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R98	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R99	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R100	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
C1	NBE41CM-106X	TAN.CAPACITOR	10	16V
C8	NBE41CM-106X	TAN.CAPACITOR	10	16V
CN29,30	SCV0501-001	CONNECTOR	50PIN	

5.8 P-LD BOARD ASSEMBLY LIST [1][0]

SCK2483-08-N0A

SCK2483-08-P0A

[1][0]□□□□□□

Symbol No.	Part No.	Part Name	Description	
IC1	PL5016-15-003-2	I.C.(M)	ALTERA	
IC2	PLSC1169	I.C.(M)	XC17256D-PD8C	(U)
	PLSC1177	I.C.(M)	XC17256D-PD8C	(E)
IC3	PLSC1170	I.C.(M)	XC17256D-PD8C	(U)
	PLSC1178	I.C.(M)	XC17256D-PD8C	(E)
IC4	S-8052ANB-NE-X	I.C.(M)	SEIKO	
IC5	TC7SU04F-X	I.C.(M)	TOSHIBA	
IC6	TC7S00F-X	I.C.(M)	TOSHIBA	
IC7	TC74HC125AF-X	I.C.(M)	TOSHIBA	
SK2	SCV1205-008	IC SOCKET	for IC2	
SK3	SCV1205-008	IC SOCKET	for IC3	
Q1	DTC124EUA-X	TRANSISTOR	ROHM	
D1	MA142A-X	DIODE	MATSUSHITA	
R1	NRSA02J-105X	M.G.RESISTOR	1M	1/10W
R2	NRSA02J-332X	M.G.RESISTOR	3.3k	1/10W
R3	NRSA02J-103X	M.G.RESISTOR	10k	1/10W
R5	NRSA02J-100X	M.G.RESISTOR	10	1/10W
R6	NRSA02J-100X	M.G.RESISTOR	10	1/10W
R7	NRSA02J-101X	M.G.RESISTOR	100	1/10W
R8	NRSA02J-103X	M.G.RESISTOR	10k	1/10W
R10	NRSA02J-103X	M.G.RESISTOR	10k	1/10W
R11	NRSA02J-562X	M.G.RESISTOR	5.6k	1/10W
C1	NDC21HJ-330X	CER.CAPACITOR	33p	50V
C2	NDC21HJ-330X	CER.CAPACITOR	33p	50V
C3	NCB21HK-473X	CER.CAPACITOR	0.047	50V
C4	NCB21HK-473X	CER.CAPACITOR	0.047	50V
C5	NCB21HK-473X	CER.CAPACITOR	0.047	50V
C6	NCB21HK-473X	CER.CAPACITOR	0.047	50V
C7	NCB21HK-473X	CER.CAPACITOR	0.047	50V
C8	NCB21HK-473X	CER.CAPACITOR	0.047	50V
C9	QER61CM-476Z	E.CAPACITOR	47	16V
C10	QER61CM-106Z	E.CAPACITOR	10	16V
C11	NCB21HK-473X	CER.CAPACITOR	0.047	50V
LC1	EXC-EMT271BT	LC FILTER	MURATA	
X1	SCV1492-001	CRYSTAL	7MHz	
CN25	SCV1978-S09	CONNECTOR	9PIN	

5.9 SE BOARD ASSEMBLY LIST [1][1]

SCK2480-01-N0A

SCK2480-01-P0A [1][1]□□□□□□□

Symbol No.	Part No.	Part Name	Description
IC1	JCS0027	I.C.(M)	JVC
IC2	MB88345PF	I.C.(M)	FUJITSU
IC3	TC7W08F-X	I.C.(M)	TOSHIBA
IC4	TC7W08F-X	I.C.(M)	TOSHIBA
IC5	TC7W08F-X	I.C.(M)	TOSHIBA
IC6	TC7SU04F-X	I.C.(M)	TOSHIBA
IC7	TC7S14F-X	I.C.(M)	TOSHIBA
IC8	TC7SU04F-X	I.C.(M)	TOSHIBA
IC15	TC4W53F-X	I.C.(M)	TOSHIBA
IC101	OPA658U-XE	I.C.(M)	BBJ
IC102	OPA658U-XE	I.C.(M)	BBJ
IC201	OPA658U-XE	I.C.(M)	BBJ
IC301	OPA658U-XE	I.C.(M)	BBJ
IC302	TC7S86F-X	I.C.(M)	TOSHIBA
IC401	NJM1496M-X	I.C.(M)	JRC
IC402	AD8011AR-X	I.C.(M)	ANALOG DEVICES
IC403	AD8011AR-X	I.C.(M)	ANALOG DEVICES
IC404	AD817AR-X	I.C.(M)	ANALOG DEVICES
IC405	AD8011AR-X	I.C.(M)	ANALOG DEVICES
IC406	AD817AR-X	I.C.(M)	ANALOG DEVICES
IC407	AD817AR-X	I.C.(M)	ANALOG DEVICES
IC408	TC4W53F-X	I.C.(M)	TOSHIBA
IC409	TC7W08F-X	I.C.(M)	TOSHIBA
IC410	NJM1496M-X	I.C.(M)	JRC
IC501	UPC812G2-X	I.C.(M)	NEC
IC502	TC74HC4538AFS-X	I.C.(M)	TOSHIBA
IC503	LM1881M-X	I.C.(M)	NATIONAL SEMICO
IC504	AD8011AR-X	I.C.(M)	ANALOG DEVICES
IC505	TC4W53F-X	I.C.(M)	TOSHIBA
IC601	TC7SU04F-X	I.C.(M)	TOSHIBA
IC602	TC7SU04F-X	I.C.(M)	TOSHIBA
IC603	TC4W53F-X	I.C.(M)	TOSHIBA
Q1	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA
Q2	MSC3930/B/-X	TRANSISTOR	MOTOROLA
Q3	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA
Q4	DTA124EUA-X	TRANSISTOR	ROHM
Q5	DTC124EUA-X	TRANSISTOR	ROHM
Q6	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA
Q10	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA
Q11	MSC3930/B/-X	TRANSISTOR	MOTOROLA
Q13	MSC3930/B/-X	TRANSISTOR	MOTOROLA
Q14	2SK663/QR/-X	FET	MATSUSHITA
Q15	MSC3930/B/-X	TRANSISTOR	MOTOROLA
Q16	MSC3930/B/-X	TRANSISTOR	MOTOROLA
Q23	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA
Q24	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA
Q25	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA
Q101	2SK663/QR/-X	FET	MATSUSHITA
Q103	2SK663/QR/-X	FET	MATSUSHITA
Q104	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA
Q105	MSC3930/B/-X	TRANSISTOR	MOTOROLA
Q106	2SK663/QR/-X	FET	MATSUSHITA
Q201	2SK663/QR/-X	FET	MATSUSHITA
Q202	2SK663/QR/-X	FET	MATSUSHITA
Q203	MSC3930/B/-X	TRANSISTOR	MOTOROLA
Q204	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA
Q205	MSC3930/B/-X	TRANSISTOR	MOTOROLA
Q206	2SJ364/QR/-X	FET	MATSUSHITA

Symbol No.	Part No.	Part Name	Description	
Q207	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q301	2SK663/QR/-X	FET	MATSUSHITA	
Q302	2SK663/QR/-X	FET	MATSUSHITA	
Q303	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q304	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA	
Q305	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q306	2SJ364/QR/-X	FET	MATSUSHITA	
Q307	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q402	2SK663/QR/-X	FET	MATSUSHITA	
Q403	3SK157/4-6/-W	FET	NEC	
Q404	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA	
Q405	3SK157/4-6/-W	FET	NEC	
Q407	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q501	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q502	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA	
D1	MA742-X	DIODE	MATSUSHITA	
D8	MA143A-X	DIODE	MATSUSHITA	
D401	SVC341/L/-X	VARI CAP DIODE	SANYO	
D402	MA143A-X	DIODE	MATSUSHITA	
D403	MA143A-X	DIODE	MATSUSHITA	
D404	MA143A-X	DIODE	MATSUSHITA	
D601	MA335-X	DIODE	MATSUSHITA	
D602	MA335-X	DIODE	MATSUSHITA	
D603	MA335-X	DIODE	MATSUSHITA	
D604	MA335-X	DIODE	MATSUSHITA	
R2	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R3	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R5	NRSA63F-153X-T	M.G.RESISTOR	15k	1/16W
R6	NRSA63F-333X-T	M.G.RESISTOR	33k	1/16W
R7	NRSA63J-105X	M.G.RESISTOR	1M	1/16W(U)
	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W(E)
R8	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W(U)
	NRSA63J-105X	M.G.RESISTOR	1M	1/16W(E)
R9	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R11	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R12	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W
R13	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W
R14	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R15	NRSA63F-181X-T	M.G.RESISTOR	180	1/16W
R16	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R17	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W
R18	NRSA63F-153X-T	M.G.RESISTOR	15k	1/16W
R19	NRSA63F-153X-T	M.G.RESISTOR	15k	1/16W
R20	NRSA63F-823X-T	M.G.RESISTOR	82k	1/16W
R21	NRSA63F-823X-T	M.G.RESISTOR	82k	1/16W
R22	NRSA63F-823X-T	M.G.RESISTOR	82k	1/16W
R23	NRSA63F-823X-T	M.G.RESISTOR	82k	1/16W
R24	NRSA63F-823X-T	M.G.RESISTOR	82k	1/16W
R25	NRSA63F-823X-T	M.G.RESISTOR	82k	1/16W
R26	NRSA63F-823X-T	M.G.RESISTOR	82k	1/16W
R27	NRSA63F-273X-T	M.G.RESISTOR	27k	1/16W
R28	NRSA63F-273X-T	M.G.RESISTOR	27k	1/16W
R30	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R33	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R36	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W
R37	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W

Symbol No.	Part No.	Part Name	Description	
R38	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R39	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R40	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R41	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R42	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R43	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R44	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R45	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R46	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R67	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R86	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R90	NRSA63F-184X-T	M.G.RESISTOR	180k	1/16W(E)
R91	NRSA63F-334X-T	M.G.RESISTOR	330k	1/16W(E)
R92	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R93	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R101	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R102	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R103	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R104	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R105	NRSA63F-682X-T	M.G.RESISTOR	6.8k	1/16W
R106	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R107	NRSA63F-911X-T	M.G.RESISTOR	910	1/16W
R108	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W
R109	NRSA63F-331X-T	M.G.RESISTOR	330	1/16W
R110	NRSA63F-331X-T	M.G.RESISTOR	330	1/16W
R111	NRSA63F-331X-T	M.G.RESISTOR	330	1/16W
R112	NRSA63F-331X-T	M.G.RESISTOR	330	1/16W
R113	NRSA63F-331X-T	M.G.RESISTOR	330	1/16W
R114	NRSA63F-562X-T	M.G.RESISTOR	5.6k	1/16W
R115	NRSA63F-683X-T	M.G.RESISTOR	68k	1/16W
R116	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R117	NRSA63F-183X-T	M.G.RESISTOR	18k	1/16W
R119	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R120	NRSA63F-331X-T	M.G.RESISTOR	330	1/16W
R123	NRSA63F-331X-T	M.G.RESISTOR	330	1/16W
R124	NRSA63F-331X-T	M.G.RESISTOR	330	1/16W
R125	NRSA63F-392X-T	M.G.RESISTOR	3.9k	1/16W
R126	NRSA63F-681X-T	M.G.RESISTOR	680	1/16W
R127	NRSA63F-273X-T	M.G.RESISTOR	27k	1/16W(U)
	NRSA63F-563X-T	M.G.RESISTOR	56k	1/16W(E)
R128	NRSA63F-682X-T	M.G.RESISTOR	6.8k	1/16W(U)
	NRSA63F-562X-T	M.G.RESISTOR	5.6k	1/16W(E)
R129	NRSA63F-392X-T	M.G.RESISTOR	3.9k	1/16W
R130	NRSA63F-682X-T	M.G.RESISTOR	6.8k	1/16W
R131	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R132	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R133	NRSA63F-471X-T	M.G.RESISTOR	470	1/16W
R134	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W
R135	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W
R136	NRSA63F-153X-T	M.G.RESISTOR	15k	1/16W(U)
	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W(E)
R137	NRSA63F-682X-T	M.G.RESISTOR	6.8k	1/16W
R138	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R139	NRSA63F-270X-T	M.G.RESISTOR	27	1/16W
R140	NRSA63F-561X-T	M.G.RESISTOR	560	1/16W
R141	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R142	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R143	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R144	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W

Symbol No.	Part No.	Part Name	Description	
R145	NRSA63F-392X-T	M.G.RESISTOR	3.9k	1/16W
R146	NRSA63F-682X-T	M.G.RESISTOR	6.8k	1/16W
R147	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R148	NRSA63F-183X-T	M.G.RESISTOR	18k	1/16W(U)
	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W(E)
R149	NRSA63F-153X-T	M.G.RESISTOR	15k	1/16W(U)
	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W(E)
R150	NRSA63F-331X-T	M.G.RESISTOR	330	1/16W
R151	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R152	NRSA63F-390X-T	M.G.RESISTOR	39	1/16W
R153	NRSA63F-471X-T	M.G.RESISTOR	470	1/16W
R160	NRSA63F-273X-T	M.G.RESISTOR	27k	1/16W(U)
	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W(E)
R170	NRSA63F-822X-T	M.G.RESISTOR	8.2k	1/16W
R201	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R202	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R203	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R204	NRSA63F-112X-T	M.G.RESISTOR	1.1k	1/16W
R205	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R207	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R208	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W
R209	NRSA63F-562X-T	M.G.RESISTOR	5.6k	1/16W(U)
	NRSA63F-822X-T	M.G.RESISTOR	8.2k	1/16W(E)
R210	NRSA63F-153X-T	M.G.RESISTOR	15k	1/16W(U)
	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W(E)
R212	NRSA63F-561X-T	M.G.RESISTOR	560	1/16W
R213	NRSA63F-333X-T	M.G.RESISTOR	33k	1/16W(U)
	NRSA63F-392X-T	M.G.RESISTOR	3.9k	1/16W(E)
R214	NRSA63F-683X-T	M.G.RESISTOR	68k	1/16W
R215	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R216	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W(U)
	NRSA63F-151X-T	M.G.RESISTOR	150	1/16W(E)
R217	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R218	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R219	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R220	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R221	NRSA63F-331X-T	M.G.RESISTOR	330	1/16W
R222	NRSA63F-562X-T	M.G.RESISTOR	5.6k	1/16W
R223	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R224	NRSA63F-153X-T	M.G.RESISTOR	15k	1/16W(U)
	NRSA63F-183X-T	M.G.RESISTOR	18k	1/16W(E)
R225	NRSA63F-562X-T	M.G.RESISTOR	5.6k	1/16W
R226	NRSA63F-392X-T	M.G.RESISTOR	3.9k	1/16W
R227	NRSA63F-151X-T	M.G.RESISTOR	150	1/16W(U)
	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W(E)
R229	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R231	NRSA63F-123X-T	M.G.RESISTOR	12k	1/16W
R301	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R302	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R303	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R304	NRSA63F-112X-T	M.G.RESISTOR	1.1k	1/16W
R305	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R307	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R308	NRSA63F-562X-T	M.G.RESISTOR	5.6k	1/16W(U)
	NRSA63F-822X-T	M.G.RESISTOR	8.2k	1/16W(E)
R309	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W
R310	NRSA63F-153X-T	M.G.RESISTOR	15k	1/16W(U)
	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W(E)
R312	NRSA63F-391X-T	M.G.RESISTOR	390	1/16W
R313	NRSA63F-153X-T	M.G.RESISTOR	15k	1/16W(U)

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Symbol No.	Part No.	Part Name	Description	
	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W(E)
R314	NRSA63F-123X-T	M.G.RESISTOR	12k	1/16W
R315	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R316	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W(U)
	NRSA63F-151X-T	M.G.RESISTOR	150	1/16W(E)
R317	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R318	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R319	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R320	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R321	NRSA63F-331X-T	M.G.RESISTOR	330	1/16W
R322	NRSA63F-562X-T	M.G.RESISTOR	5.6k	1/16W
R323	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R324	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W
R326	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W(E)
R327	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R328	NRSA63F-151X-T	M.G.RESISTOR	150	1/16W(U)
	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W(E)
R329	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R331	NRSA63F-123X-T	M.G.RESISTOR	12k	1/16W
R409	NRSA63F-561X-T	M.G.RESISTOR	560	1/16W
R410	NRSA63F-122X-T	M.G.RESISTOR	1.2k	1/16W
R411	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R412	NRSA63F-122X-T	M.G.RESISTOR	1.2k	1/16W
R413	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R414	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R415	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R416	NRSA63F-822X-T	M.G.RESISTOR	8.2k	1/16W
R417	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R418	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R419	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R420	NRSA63F-181X-T	M.G.RESISTOR	180	1/16W
R421	NRSA63J-105X	M.G.RESISTOR	1M	1/16W
R422	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R423	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R424	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R425	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R426	NRSA63F-331X-T	M.G.RESISTOR	330	1/16W
R427	NRSA63F-153X-T	M.G.RESISTOR	15k	1/16W(U)
	NRSA63F-223X-T	M.G.RESISTOR	2.2k	1/16W(E)
R428	NRSA63F-122X-T	M.G.RESISTOR	1.2k	1/16W
R430	NRSA63F-153X-T	M.G.RESISTOR	15k	1/16W(U)
	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W(E)
R431	NRSA63F-822X-T	M.G.RESISTOR	8.2k	1/16W(U)
	NRSA63F-153X-T	M.G.RESISTOR	15k	1/16W(E)
R432	NRSA63F-182X-T	M.G.RESISTOR	1.8k	1/16W
R433	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W(U)
	NRSA63F-821X-T	M.G.RESISTOR	820	1/16W(E)
R434	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R435	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R436	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R437	NRSA63F-750X-T	M.G.RESISTOR	75	1/16W
R438	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R439	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R440	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R441	NRSA63J-105X	M.G.RESISTOR	1M	1/16W
R442	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R443	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R444	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R445	NRSA63F-560X-T	M.G.RESISTOR	56	1/16W

Symbol No.	Part No.	Part Name	Description	
R450	NRSA63F-122X-T	M.G.RESISTOR	1.2k	1/16W
R451	NRSA63F-153X-T	M.G.RESISTOR	15k	1/16W
R452	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R453	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R454	NRSA63F-392X-T	M.G.RESISTOR	3.9k	1/16W
R455	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R456	NRSA63F-392X-T	M.G.RESISTOR	3.9k	1/16W
R457	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R458	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R459	NRSA63F-333X-T	M.G.RESISTOR	33k	1/16W
R460	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R461	NRSA63F-392X-T	M.G.RESISTOR	3.9k	1/16W
R462	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R463	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R464	NRSA63F-392X-T	M.G.RESISTOR	3.9k	1/16W
R465	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R466	NRSA63F-392X-T	M.G.RESISTOR	3.9k	1/16W
R467	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R468	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R469	NRSA63F-333X-T	M.G.RESISTOR	33k	1/16W
R470	NRSA63F-393X-T	M.G.RESISTOR	39k	1/16W(U)
	NRSA63F-393X-T	M.G.RESISTOR	39k	1/16W(E)
R471	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W
R472	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R473	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R474	NRSA63F-684X-T	M.G.RESISTOR	680k	1/16W
R475	NRSA63F-684X-T	M.G.RESISTOR	680k	1/16W
R476	NRSA63F-151X-T	M.G.RESISTOR	150	1/16W
R477	NRSA63F-561X-T	M.G.RESISTOR	560	1/16W
R478	NRSA63F-561X-T	M.G.RESISTOR	560	1/16W
R501	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R502	NRSA63F-563X-T	M.G.RESISTOR	56k	1/16W
R503	NRSA63F-273X-T	M.G.RESISTOR	27k	1/16W
R504	NRSA63F-333X-T	M.G.RESISTOR	33k	1/16W
R505	NRSA63F-273X-T	M.G.RESISTOR	27k	1/16W
R506	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R507	NRSA63F-122X-T	M.G.RESISTOR	1.2k	1/16W
R508	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R509	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R510	NRSA63F-391X-T	M.G.RESISTOR	390	1/16W
R511	NRSA63F-682X-T	M.G.RESISTOR	6.8k	1/16W
R512	NRSA63F-684X-T	M.G.RESISTOR	680k	1/16W
R513	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W
R514	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W
R515	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R516	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R601	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R602	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R603	NRSA63J-105X	M.G.RESISTOR	1M	1/16W
R604	NRSA63F-271X-T	M.G.RESISTOR	270	1/16W
R605	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R606	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R607	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R608	NRSA63F-224X-T	M.G.RESISTOR	220k	1/16W
R609	NRSA63F-124X-T	M.G.RESISTOR	120k	1/16W
R610	NRSA63J-105X	M.G.RESISTOR	1M	1/16W
R611	NRSA63F-221X-T	M.G.RESISTOR	220	1/16W
R612	NRSA63F-271X-T	M.G.RESISTOR	270	1/16W
R613	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R614	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W

Symbol No.	Part No.	Part Name	Description	
R615	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R616	NRSA63F-333X-T	M.G.RESISTOR	33k	1/16W
R617	NRSA63F-124X-T	M.G.RESISTOR	120k	1/16W
R618	NRSA63F-224X-T	M.G.RESISTOR	220k	1/16W
R619	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W
R620	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W
R701	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W(E)
R702	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W(U)
C1	NBE21AM-106X	TAN.CAPACITOR	10	10V
C2	NBE21AM-106X	TAN.CAPACITOR	10	10V
C3	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C4	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C5	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C6	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C7	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C8	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C9	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C10	NBE21AM-106X	TAN.CAPACITOR	10	10V
C11	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C12	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C13	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C14	NDC31HJ-270X	CER.CAPACITOR	27p	50V
C15	NDC31HJ-270X	CER.CAPACITOR	27p	50V
C16	NDC31HJ-330X	CER.CAPACITOR	33p	50V
C41	NDC31HJ-150X	CER.CAPACITOR	15p	50V
C52	NDC31HJ-470X	CER.CAPACITOR	47p	50V
C53	NDC31HJ-470X	CER.CAPACITOR	47p	50V
C54	NDC31HJ-220X	CER.CAPACITOR	22p	50V
C58	NEH90JM-476X	E.CAPACITOR	47	6.3V
C59	NEH90JM-476X	E.CAPACITOR	47	6.3V
C101	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C102	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C103	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C104	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C105	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C106	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C107	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C108	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C109	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C110	NDC31HJ-680X	CER.CAPACITOR	68p	50V
C111	NDC31HJ-180X	CER.CAPACITOR	18p	50V
C201	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C202	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C203	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C204	NDC31HJ-680X	CER.CAPACITOR	68p	50V
C301	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C302	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C303	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C304	NDC31HJ-680X	CER.CAPACITOR	68p	50V
C401	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C402	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C406	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C407	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C408	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C409	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C410	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C411	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C412	NCB31CK-473X	CER.CAPACITOR	0.047	16V

Symbol No.	Part No.	Part Name	Description	
C413	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C414	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C415	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C416	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C417	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C418	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C420	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C421	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C422	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C423	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C424	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C425	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C426	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C427	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C430	NBE21VM-224X	TAN.CAPACITOR	0.22	35V
C431	NBE21VM-224X	TAN.CAPACITOR	0.22	35V
C432	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C433	NDC31HJ-220X	CER.CAPACITOR	22p	50V(U)
	NDC31HJ-150X	CER.CAPACITOR	15p	50V(E)
C434	NDC31HJ-120X	CER.CAPACITOR	12p	50V(U)
	NDC31HJ-9R0X	CER.CAPACITOR	9p	50V(E)
C435	NDC31HJ-2R0X	CER.CAPACITOR	2p	50V
C436	NDC31HJ-180X	CER.CAPACITOR	18p	50V(U)
C501	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C502	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C503	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C504	NDC31HJ-560X	CER.CAPACITOR	56p	50V
C505	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C506	NDC31HJ-151X	CER.CAPACITOR	150p	50V(U)
	NDC31HJ-121X	CER.CAPACITOR	120p	50V(E)
C508	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C509	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C510	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C511	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C512	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C513	NBE21AM-106X	TAN.CAPACITOR	10	10V
C601	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C602	NBE21EM-105X	TAN.CAPACITOR	1	25V
C603	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C604	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C605	NDC31HJ-222X	CER.CAPACITOR	2200p	50V
C606	NDC31HJ-222X	CER.CAPACITOR	2200p	50V
C607	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C608	NDC31HJ-222X	CER.CAPACITOR	2200p	50V
C609	NDC31HJ-222X	CER.CAPACITOR	2200p	50V
C610	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C611	NCB31HK-103X	CER.CAPACITOR	0.01	50V
C612	NBE21EM-105X	TAN.CAPACITOR	1	25V
C613	NDC31HJ-220X	CER.CAPACITOR	22p	50V
L501	NQL054K-120X	COIL	12μH	
LC5	SCV2031-001V	LC FILTER		
LC6	SCV2030-001W	LC FILTER		
LC101	SCV1859-001	LC FILTER	12MHz LPF	
LC201	NQR0145-001X	LC FILTER	3MHz LPF	
LC301	NQR0145-001X	LC FILTER	3MHz LPF	
LC401	SCV2637-001	LC FILTER	Fsc BPF	(U)
	SCV2638-001	LC FILTER	Fsc BPF	(E)

[SE]

Symbol No.	Part No.	Part Name	Description	
LC501	SCV2597-S144Z	LC FILTER		
X601	SCV1316-002	CRYSTAL	27MHz	
X602	SCV2219-001W	CRYSTAL	14.31818MHz	(U)
	CE42275-001Y	CRYSTAL	17.734475MHz	(E)
CN31	SCV0501-001	CONNECTOR	30PIN	
CN32	SCV0501-001	CONNECTOR	30PIN	
TP1 – TP10	SCV1880-001	TEST POINT		
K1 – K602	SCV2662-027	FERRITE BEADS		

5.10 CP BOARD ASSEMBLY LIST [1][2]

SCK2479-00A [1][2]□□□□□□□

Symbol No.	Part No.	Part Name	Description	
IC1	MB90T678BPF	I.C.(M)	FUJITSU	
IC2	PLSC1165	I.C.(M)	N28F001	
SK2	SCV2768-001X	IC SOCKET	for IC2	
IC3	LH5168N-10L	I.C.(M)	SHARP	
IC4	MC74HC373AF-X	I.C.(M)	MOTOROLA	
IC5	TC74HC00AF-X	I.C.(M)	TOSHIBA	
IC6	S-8052ANB-NE-X	I.C.(M)	SEIKO	
IC7	S-29230AFJ-X	I.C.(M)	SEIKO	
IC8	RTC-4513A	I.C.(M)	EPSON	
IC9	MB89255BH-PF	I.C.(M)	FUJITSU	
IC11	JCS0005	I.C.(M)	JVC	
IC12	UPD6453GT-101	I.C.(M)	NEC	
IC13	AD817AR-X	I.C.(M)	ANALOG DEVICES	
IC14	TC74VHC125FS-X	I.C.(M)	TOSHIBA	
IC21	LMC6082IM-X	I.C.(M)	NATIONAL SEMICO	
IC22	LMC6082IM-X	I.C.(M)	NATIONAL SEMICO	
IC23	LMC6082IM-X	I.C.(M)	NATIONAL SEMICO	
IC24	LMC6082IM-X	I.C.(M)	NATIONAL SEMICO	
IC25	LMC6082IM-X	I.C.(M)	NATIONAL SEMICO	
IC26	MC14066BF-X	I.C.(M)	MOTOROLA	
IC27	TC4S66F-X	I.C.(M)	TOSHIBA	
IC28	TC4S66F-X	I.C.(M)	TOSHIBA	
IC29	TC4S66F-X	I.C.(M)	TOSHIBA	
IC30	MC74HC4052F-X	I.C.(M)	MOTOROLA	
IC31	NJM062M-X	I.C.(M)	JRC	
IC32	NJM062M-X	I.C.(M)	JRC	
IC35	MC74HC4052F-X	I.C.(M)	MOTOROLA	
IC36	TC4S66F-X	I.C.(M)	TOSHIBA	
IC37	NJM2068M-D-X	I.C.(M)	JRC	
IC38	MC14066BF-X	I.C.(M)	MOTOROLA	
IC501	TC7S08F-X	I.C.(M)	TOSHIBA	
Q1	DTC124EUA-X	TRANSISTOR	ROHM	
Q2	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q3	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q4	MSC3930/B/-X	TRANSISTOR	MOTOROLA	
Q5	2SA1532/BC/-X	TRANSISTOR	MATSUSHITA	
D1	MA142WK-X	DIODE	MATSUSHITA	
D2	MA335-X	DIODE	MATSUSHITA	
D3	MA742-X	DIODE	MATSUSHITA	
D4	MA742-X	DIODE	MATSUSHITA	
D5	MA742-X	DIODE	MATSUSHITA	
D6	MA742-X	DIODE	MATSUSHITA	
D9	MA742-X	DIODE	MATSUSHITA	
D501	MA784-X	DIODE	MATSUSHITA	
D502	MA784-X	DIODE	MATSUSHITA	
D503	MA784-X	DIODE	MATSUSHITA	
R1	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R2	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R3	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R4	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R5	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R6	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R7	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W

Symbol No.	Part No.	Part Name	Description	
R8	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R11	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R12	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R13	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R14	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R15	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R16	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R17	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R18	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R19	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R20	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R21	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R22	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R23	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R24	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R25	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R26	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R31	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R32	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R33	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R34	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R35	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R36	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R37	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R38	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R40	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R41	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R42	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R43	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R44	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R45	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R46	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R47	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R48	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R49	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R52	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R53	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R54	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R55	NRSA63F-104X-T	M.G.RESISTOR	100k	1/16W
R56	NRSA63F-393X-T	M.G.RESISTOR	39k	1/16W
R57	NRSA63F-393X-T	M.G.RESISTOR	39k	1/16W
R58	NRSA63F-153X-T	M.G.RESISTOR	15k	1/16W
R59	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R60	NRSA63F-562X-T	M.G.RESISTOR	5.6k	1/16W
R61	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R62	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R71	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R72	NRSA63F-392X-T	M.G.RESISTOR	3.9k	1/16W
R73	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R74	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R75	NRSA63F-392X-T	M.G.RESISTOR	3.9k	1/16W
R76	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R77	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R78	NRSA63F-392X-T	M.G.RESISTOR	3.9k	1/16W
R79	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R80	NRSA63F-564X-T	M.G.RESISTOR	560k	1/16W
R81	NRSA63F-564X-T	M.G.RESISTOR	560k	1/16W
R82	NRSA63F-564X-T	M.G.RESISTOR	560k	1/16W
R83	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W

Symbol No.	Part No.	Part Name	Description	
R85	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R91	NRSA63F-331X-T	M.G.RESISTOR	330	1/16W
R93	NRSA63F-561X-T	M.G.RESISTOR	560	1/16W
R94	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R95	NRSA63F-391X-T	M.G.RESISTOR	390	1/16W
R96	NRSA63F-561X-T	M.G.RESISTOR	560	1/16W
R97	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R98	NRSA63F-331X-T	M.G.RESISTOR	330	1/16W
R100	NRSA63F-561X-T	M.G.RESISTOR	560	1/16W
R101	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R102	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R103	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R104	NRSA63F-122X-T	M.G.RESISTOR	1.2k	1/16W
R105	NRSA63F-562X-T	M.G.RESISTOR	5.6k	1/16W
R106	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R107	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R108	NRSA63F-152X-T	M.G.RESISTOR	1.5k	1/16W
R109	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R110	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R111	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R112	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R120	NRSA63F-225X-T	M.G.RESISTOR	2.2M	1/16W
R121	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R122	NRSA63F-332X-T	M.G.RESISTOR	3.3k	1/16W
R123	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R132	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R134	NRSA63F-272X-T	M.G.RESISTOR	2.7k	1/16W
R135	NRSA63F-224X-T	M.G.RESISTOR	220k	1/16W
R136	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W
R137	NRSA63F-222X-T	M.G.RESISTOR	2.2k	1/16W
R138	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R141	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R142	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R143	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R144	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R145	NRSA63F-100X-T	M.G.RESISTOR	10	1/16W
R146	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R147	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R148	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R149	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R150	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R151	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R152	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R153	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R154	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
R155	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R156	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R157	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R158	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R159	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R160	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R161	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R162	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R163	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R164	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R165	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R166	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R167	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R168	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W

[CP]

Symbol No.	Part No.	Part Name	Description	
R169	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R170	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R171	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R172	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R173	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R174	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R175	NRSA63F-471X-T	M.G.RESISTOR	470	1/16W
R176	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R177	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R178	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R179	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R180	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R181	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R182	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R183	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R184	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R185	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R186	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R187	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R188	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R189	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R190	NRSA63F-472X-T	M.G.RESISTOR	4.7k	1/16W
R191	NRSA63F-473X-T	M.G.RESISTOR	47k	1/16W
R192	NRSA63F-103X-T	M.G.RESISTOR	10k	1/16W
R193	NRSA63F-223X-T	M.G.RESISTOR	22k	1/16W
R194	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R501	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R503	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R504	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R505	NRSA63F-101X-T	M.G.RESISTOR	100	1/16W
R506	NRSA63J-105X	M.G.RESISTOR	1M	1/16W
R507	NRSA63J-105X	M.G.RESISTOR	1M	1/16W
R509	NRSA63F-102X-T	M.G.RESISTOR	1k	1/16W
VR2	NVP1415-503X	TRIM.RESISTOR	Eoo ADJ	50k
VR3	NVP1415-201X	TRIM.RESISTOR	B.ADJ	200
VR4	NVP1415-201X	TRIM.RESISTOR	R.ADJ	200
VR5	SCV2773-103V	V RESISTOR	AU.LEVEL	10k
C1	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C2	NBE21AM-106X	TAN.CAPACITOR	10	10V
C4	NCB31HK-562X	CER.CAPACITOR	5600p	50V
C5	NBE21EM-105X	TAN.CAPACITOR	1	25V
C6	NDC31HJ-820X	CER.CAPACITOR	82p	50V
C7	NDC31HJ-150X	CER.CAPACITOR	15p	50V
C8	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C11	NDC31HJ-100X	CER.CAPACITOR	10p	50V
C12	NDC31HJ-270X	CER.CAPACITOR	27p	50V
C13	NDC31HJ-270X	CER.CAPACITOR	27p	50V
C14	NDC31HJ-270X	CER.CAPACITOR	27p	50V
C15	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C16	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C17	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C18	NFV41CJ-473X	M.M.CAPACITOR	0.047	16V
C19	NFV41CJ-473X	M.M.CAPACITOR	0.047	16V
C20	NFV41CJ-473X	M.M.CAPACITOR	0.047	16V
C21	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C22	NFV41CJ-473X	M.M.CAPACITOR	0.047	16V
C23	NFV41CJ-473X	M.M.CAPACITOR	0.047	16V

Symbol No.	Part No.	Part Name	Description	
C25	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C26	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C30	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C31	NFV41CJ-473X	M.M.CAPACITOR	0.047	16V
C32	NFV41CJ-473X	M.M.CAPACITOR	0.047	16V
C33	NFV41CJ-473X	M.M.CAPACITOR	0.047	16V
C34	NFV41CJ-473X	M.M.CAPACITOR	0.047	16V
C35	NFV41CJ-473X	M.M.CAPACITOR	0.047	16V
C36	NFV41CJ-473X	M.M.CAPACITOR	0.047	16V
C37	NFV41CJ-473X	M.M.CAPACITOR	0.047	16V
C41	NBE21AM-106X	TAN.CAPACITOR	10	10V
C42	NBE21AM-106X	TAN.CAPACITOR	10	10V
C43	NBE21AM-106X	TAN.CAPACITOR	10	10V
C44	NBE21AM-106X	TAN.CAPACITOR	10	10V
C45	NBE51AM-476X	TAN.CAPACITOR	47	10V
C46	NBE51AM-476X	TAN.CAPACITOR	47	10V
C51	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C52	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C53	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C54	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C56	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C57	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C58	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C60	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C61	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C62	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C64	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C65	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C66	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C67	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C68	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C69	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C70	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C71	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C72	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C73	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C74	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C79	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C80	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C81	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C501	NDC31HJ-100X	CER.CAPACITOR	10p	50V
C502	NCB31HK-562X	CER.CAPACITOR	5600p	50V
C503	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C504	NCB31CK-473X	CER.CAPACITOR	0.047	16V
L1	NQL054K-220X	COIL	22μH	
X1	SCV2811-001Z	CRYSTAL	4MHz	
S1	SCV2169-001	SLIDE SWITCH	DNR	
S2	SCV2169-001	SLIDE SWITCH	SHUTTER	
S3	SCV2771-001Z	TACT SWITCH	MENU	
S4	SCV2771-001Z	TACT SWITCH	ITEM	
S5	SCV2771-001Z	TACT SWITCH	SET	
S6	SCV2771-001Z	TACT SWITCH	UP	
S7	SCV2771-001Z	TACT SWITCH	DOWN	
S8	SCV2169-001	SLIDE SWITCH	FILE	
S12	SCV2595-008W	DIP SWITCH		

5.11 IF BOARD ASSEMBLY LIST [1][3]

SCK2483-01-00A [1][3]□□□□□□□

Symbol No.	Part No.	Part Name	Description
CN16	SCV1770-010	CONNECTOR	10PIN
CN18	SCV1770-009	CONNECTOR	9PIN
CN27	SCV2644-120X	CONNECTOR	20PIN
CN28	SCV2644-124X	CONNECTOR	24PIN
TP1 – TP18	SCV1880-001	TEST POINT	
BT1	CR2032-HLD	BATTERY HOLDER	
K1,K2	SCV2662-027	FERRITE BEADS	

Symbol No.	Part No.	Part Name	Description	
IC1	AD817AR-X	I.C.(M)	ANALOG DEVICES	
D1	HZM6C-X	ZENER DIODE	HITACHI	
D2	MA143A-X	DIODE	MATSUSHITA	
D3	MA143A-X	DIODE	MATSUSHITA	
D4	MA143A-X	DIODE	MATSUSHITA	
D5	MA143A-X	DIODE	MATSUSHITA	
D6	HZM9C-X	ZENER DIODE	HITACHI	
D7	MA143A-X	DIODE	MATSUSHITA	
D8	MA143A-X	DIODE	MATSUSHITA	
D9	MA143A-X	DIODE	MATSUSHITA	
D10	MA143A-X	DIODE	MATSUSHITA	
D11	MA143A-X	DIODE	MATSUSHITA	
D12	MA143A-X	DIODE	MATSUSHITA	
D13	MA143A-X	DIODE	MATSUSHITA	
D14	MA143A-X	DIODE	MATSUSHITA	
D15	MA143A-X	DIODE	MATSUSHITA	
D16	MA143A-X	DIODE	MATSUSHITA	
D17	MA143A-X	DIODE	MATSUSHITA	
D18	HZM6C-X	ZENER DIODE	HITACHI	
D19	MA143A-X	DIODE	MATSUSHITA	
D20	HZM9C-X	ZENER DIODE	HITACHI	
D21	MA143A-X	DIODE	MATSUSHITA	
D22	MA143A-X	DIODE	MATSUSHITA	
D23	MA143A-X	DIODE	MATSUSHITA	
D24	MA143A-X	DIODE	MATSUSHITA	
D25	MA143A-X	DIODE	MATSUSHITA	
D26	MA143A-X	DIODE	MATSUSHITA	
D27	MA143A-X	DIODE	MATSUSHITA	
D28	MA143A-X	DIODE	MATSUSHITA	
D29	MA143A-X	DIODE	MATSUSHITA	
D30	MA143A-X	DIODE	MATSUSHITA	
D31	MA143A-X	DIODE	MATSUSHITA	
D32	MA143A-X	DIODE	MATSUSHITA	
R1	NRSA02J-153X	M.G.RESISTOR	15k	1/10W
R2	NRSA02J-473X	M.G.RESISTOR	47k	1/10W
R3	NRSA02J-153X	M.G.RESISTOR	15k	1/10W
R4	NRSA02J-473X	M.G.RESISTOR	47k	1/10W
R5	NRSA02J-562X	M.G.RESISTOR	5.6k	1/10W
R6	NRSA02J-101X	M.G.RESISTOR	100	1/10W
R7	NRSA02J-562X	M.G.RESISTOR	5.6k	1/10W
R8	NRSA02J-750X	M.G.RESISTOR	75	1/10W
R9	NRSA02J-682X	M.G.RESISTOR	6.8k	1/10W
R10	NRSA02J-102X	M.G.RESISTOR	1k	1/10W
R11	NRSA02J-473X	M.G.RESISTOR	47k	1/10W
R12	NRSA02J-473X	M.G.RESISTOR	47k	1/10W
R13	NRSA02J-0R0X	M.G.RESISTOR	0	1/10W
C1	NCB21HK-473X	CER.CAPACITOR	0.047	50V
⚠ LC1	EXC-EMT271BT	LC FILTER	MURATA	
CN11	SSV1591-L03	CONNECTOR	3PIN	
CN34	SCV2447-026	CONNECTOR	26PIN	
CN35	SCV2447-020	CONNECTOR	20PIN	
⚠ CN39	SCV1259-50P	CONNECTOR	50PIN	
CN43	SCV1978-L05	CONNECTOR	5PIN	
K1-K3	SCV2662-027	FERRITE BEADS		

5.12 SW1 BOARD ASSEMBLY LIST [1][4]
SCK2483-02-00A [1][4]□□□□□□□

Symbol No.	Part No.	Part Name	Description
S7	SCV0516-A18JB2	TOGGLE SWITCH	ACCU FOCUS/WHT
S8	SCV1639-001	PUSH SWITCH	VTR TRIG1
S9	SCV0337-002	TOGGLE SWITCH	ZEBRA
CN15	SCV1978-L05	CONNECTOR	5PIN

5.13 SW2 BOARD ASSEMBLY LIST [1][5]
SCK2483-03-00A [1][5]□□□□□□□

Symbol No.	Part No.	Part Name	Description	
Q1	2SK662/QR/-X	FET	MATSUSHITA	
LD1	SLB-25VR3F	LED		
R1	NRSA02J-332X	M.G.RESISTOR	3.3k	1/10W
R2	NRSA02J-152X	M.G.RESISTOR	1.5k	1/10W
R3	NRSA02J-473X	M.G.RESISTOR	47k	1/10W
R4	NRSA02J-564X	M.G.RESISTOR	560k	1/10W
⚠S1	SCV1313-001	TOGGLE SWITCH	POWER	
	SC43656-185	SPACER		
CN11	SSV1591-L03	CONNECTOR	3PIN	
CN17	SSV1591-L05	CONNECTOR	5PIN	

5.14 SW3 BOARD ASSEMBLY LIST [1][6]
SCK2483-04-00A [1][6]□□□□□□□

Symbol No.	Part No.	Part Name	Description
S2	SCV1639-001	PUSH SWITCH	VTR TRIG2
CN38	SCV1978-L02	CONNECTOR	2PIN

5.15 SW4 BOARD ASSEMBLY LIST [1][7]
SCK2483-05-00A [1][7]□□□□□□□

Symbol No.	Part No.	Part Name	Description
D1	HZM6C-X	ZENER DIODE	HITACHI
D2	HZM6C-X	ZENER DIODE	HITACHI
D3	HZM6C-X	ZENER DIODE	HITACHI
D4	HZM6C-X	ZENER DIODE	HITACHI
D5	HZM6C-X	ZENER DIODE	HITACHI
D6	HZM6C-X	ZENER DIODE	HITACHI
D7	HZM6C-X	ZENER DIODE	HITACHI
S3	SCV0516-A13HB2	TOGGLE SWITCH	GAIN
S4	SCV0516-A18JB2	TOGGLE SWITCH	DISPLAY
S5	SCV0337-002	TOGGLE SWITCH	MODE
S6	SCV0338-002	TOGGLE SWITCH	WHITE BAL
CN16	SCV1978-L10	CONNECTOR	10PIN
CN38	SCV1978-L02	CONNECTOR	2PIN

5.16 SW5 BOARD ASSEMBLY LIST [1][8]
SCK2483-06-00A [1][8]□□□□□□□

Symbol No.	Part No.	Part Name	Description
LD2	GL3HS44	L.E.D.	SHARP
	SC43656-050	LED SPACER	
S10	SCV1639-001	PUSH SWITCH	FAS
S11	SCV1639-001	PUSH SWITCH	LOLUX
S12	SCV2729-001	SLIDE SWITCH	IRIS
S13	SCV2729-001	SLIDE SWITCH	BLACK
CN18	SCV1978-L09	CONNECTOR	9PIN

5.17 SW6 BOARD ASSEMBLY LIST [1][9]
SCK2483-07-U0A [1][9]□□□□□□□

Symbol No.	Part No.	Part Name	Description	
R1	NRSA02J-0R0X	M.G.RESISTOR	0	1/10W
R2	NRSA02J-0R0X	M.G.RESISTOR	0	1/10W
R3	NRSA02J-223X	M.G.RESISTOR	22k	1/10W
R4	NRSA02J-562X	M.G.RESISTOR	5.6k	1/10W
R5	NRSA02J-103X	M.G.RESISTOR	10k	1/10W
R6	NRSA02J-183X	M.G.RESISTOR	18k	1/10W
R7	NRSA02J-223X	M.G.RESISTOR	22k	1/10W
R8	NRSA02J-332X	M.G.RESISTOR	3.3k	1/10W
VR1	QVPB609-203Z	TRIM.RESISTOR	H	PHASE 20k
VR2	QVPB609-203Z	TRIM.RESISTOR	SC	PHASE 20k
S14	SCV1682-001	ROTARY SWICH	SC COARSE	
S15	SCV2578-001	SLIDE SWITCH	DISP MIX	
S16	QSW0459-001	SLIDE SWITCH	PHANTOM	
CN12	SCV2447-010	CONNECTOR	10PIN	

5.18 CN BOARD ASSEMBLY LIST [2][0]
SCK2483-09-00A [2][0]□□□□□□□

Symbol No.	Part No.	Part Name	Description
CN37	SCV1978-S05	CONNECTOR	5PIN

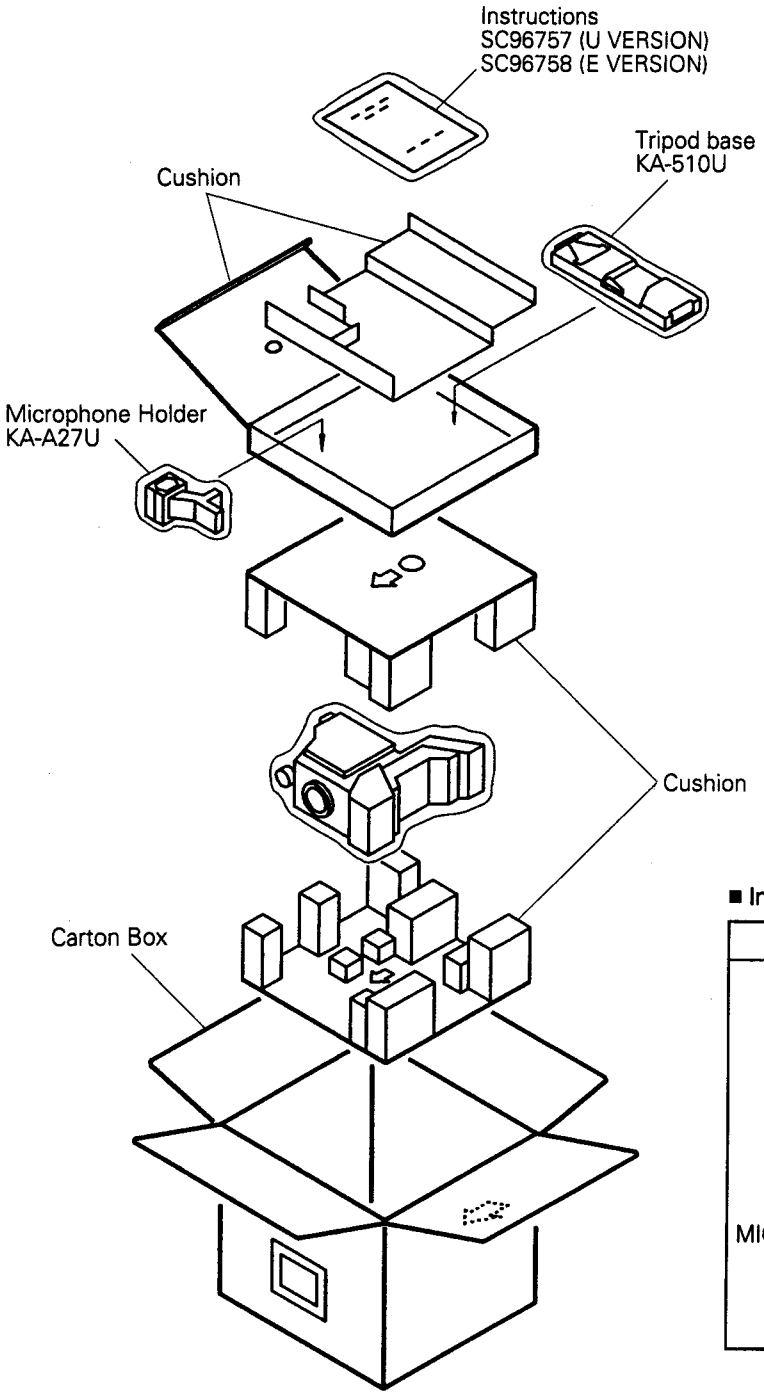
5.19 AU BOARD ASSEMBLY LIST [2][1]

SCK2477-07-U0A [2][1]□□□□□□□

Symbol No.	Part No.	Part Name	Description	
IC1	NJM2068M-D-X	I.C.(M)	JRC	
IC2	M5222FP-XE	I.C.(M)	MITSUBISHI	
IC3	NJM2068M-D-X	I.C.(M)	JRC	
IC4	NJM2068M-D-X	I.C.(M)	JRC	
IC5	TC74HC165AF-X	I.C.(M)	TOSHIBA	
Q1	2SD1820/QR/-X	TRANSISTOR	MATSUSHITA	
Q2	2SB766/QR/-X	TRANSISTOR	MATSUSHITA	
D1	MA143A-X	DIODE	MATSUSHITA	
D2	MA143A-X	DIODE	MATSUSHITA	
D3	MA143A-X	DIODE	MATSUSHITA	
D4	MA143A-X	DIODE	MATSUSHITA	
D5	MA143A-X	DIODE	MATSUSHITA	
D6	MA143A-X	DIODE	MATSUSHITA	
D7	MA143A-X	DIODE	MATSUSHITA	
D8	MA143A-X	DIODE	MATSUSHITA	
D9	MA143A-X	DIODE	MATSUSHITA	
D10	MA143A-X	DIODE	MATSUSHITA	
D11	MA143A-X	DIODE	MATSUSHITA	
D12	MA143A-X	DIODE	MATSUSHITA	
D13	MA143A-X	DIODE	MATSUSHITA	
D14	MA143A-X	DIODE	MATSUSHITA	
R1	NRSA63J-182X	M.G.RESISTOR	1.8k	1/16W
R2	NRSA63J-182X	M.G.RESISTOR	1.8k	1/16W
R3	NRSA63J-182X	M.G.RESISTOR	1.8k	1/16W
R4	NRSA63J-182X	M.G.RESISTOR	1.8k	1/16W
R5	NRSA63J-182X	M.G.RESISTOR	1.8k	1/16W
R6	NRSA63J-182X	M.G.RESISTOR	1.8k	1/16W
R7	NRSA63J-182X	M.G.RESISTOR	1.8k	1/16W
R8	NRSA63J-182X	M.G.RESISTOR	1.8k	1/16W
R9	NRSA63J-220X	M.G.RESISTOR	22	1/16W
R10	NRSA63J-821X	M.G.RESISTOR	820	1/16W
R11	NRSA63J-102X	M.G.RESISTOR	1k	1/16W
R12	NRSA63J-473X	M.G.RESISTOR	47k	1/16W
R13	NRSA63J-273X	M.G.RESISTOR	27k	1/16W
R14	NRSA63J-220X	M.G.RESISTOR	22	1/16W
R15	NRSA63J-821X	M.G.RESISTOR	820	1/16W
R16	NRSA63J-102X	M.G.RESISTOR	1k	1/16W
R17	NRSA63J-473X	M.G.RESISTOR	47k	1/16W
R18	NRSA63J-273X	M.G.RESISTOR	27k	1/16W
R19	NRSA63J-822X	M.G.RESISTOR	8.2k	1/16W
R20	NRSA63J-125X	M.G.RESISTOR	1.2M	1/16W
R21	NRSA63J-564X	M.G.RESISTOR	560k	1/16W
R22	NRSA63J-124X	M.G.RESISTOR	120k	1/16W
R23	NRSA63J-124X	M.G.RESISTOR	120k	1/16W
R24	NRSA63J-124X	M.G.RESISTOR	120k	1/16W
R25	NRSA63J-273X	M.G.RESISTOR	27k	1/16W
R26	NRSA63J-393X	M.G.RESISTOR	39k	1/16W
R27	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R28	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R29	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R30	NRSA63J-470X	M.G.RESISTOR	47	1/16W
R31	NRSA63J-124X	M.G.RESISTOR	120k	1/16W
R32	NRSA63J-273X	M.G.RESISTOR	27k	1/16W
R33	NRSA63J-393X	M.G.RESISTOR	39k	1/16W
R34	NRSA63J-223X	M.G.RESISTOR	22k	1/16W

Symbol No.	Part No.	Part Name	Description	
R35	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R36	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R37	NRSA63J-470X	M.G.RESISTOR	47	1/16W
R41	NRSA63J-0R0X	M.G.RESISTOR	0	1/16W
R43	NRSA63J-123X	M.G.RESISTOR	12k	1/16W
R44	NRSA63J-821X	M.G.RESISTOR	820	1/16W
R45	NRSA63J-153X	M.G.RESISTOR	15k	1/16W
R46	NRSA63J-222X	M.G.RESISTOR	2.2k	1/16W
R47	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R48	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R49	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R50	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R51	NRSA63J-334X	M.G.RESISTOR	330k	1/16W
R52	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
R53	NRSA63J-223X	M.G.RESISTOR	22k	1/16W
C1	NEH91HM-335NZ	E.CAPACITOR	3.3	50V
C2	NDC31HJ-331X	CER.CAPACITOR	330p	50V
C3	NDC31HJ-151X	CER.CAPACITOR	150p	50V
C4	NEH91HM-335NZ	E.CAPACITOR	3.3	50V
C5	NDC31HJ-331X	CER.CAPACITOR	330p	50V
C6	NDC31HJ-151X	CER.CAPACITOR	150p	50V
C7	NBE71CM-476X	TAN.CAPACITOR	47	16V
C8	NBE71CM-476X	TAN.CAPACITOR	47	16V
C9	NBE21AM-106X	TAN.CAPACITOR	10	10V
C10	NEN21EM-335X	N.P.CAPACITOR	3.3	25V
C11	NDC31HJ-101X	CER.CAPACITOR	100p	50V
C12	NDC31HJ-101X	CER.CAPACITOR	100p	50V
C13	NEN21EM-335X	N.P.CAPACITOR	3.3	25V
C14	NDC31HJ-101X	CER.CAPACITOR	100p	50V
C15	NDC31HJ-101X	CER.CAPACITOR	100p	50V
C16	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C17	NEN21EM-335X	N.P.CAPACITOR	3.3	25V
C18	NBE21CM-475X	TAN.CAPACITOR	4.7	16V
C19	NCB31CK-473X	CER.CAPACITOR	0.047	16V
C20	QETA1HM-107	E.CAPACITOR	100	50V
CN13	SCV2477-020	CONNECTOR	20PIN	
CN14	SSV2416-110Z	CONNECTOR	10PIN	
CN15	SSV2416-105Z	CONNECTOR	5PIN	
CN20	SSV2416-106Z	CONNECTOR	6PIN	
CN43	SSV2416-104Z	CONNECTOR	4PIN	
CN44	SSV2416-103Z	CONNECTOR	3PIN	
K1 – K5	SCV2662-027	FERRITE BEADS		
T1	SCV0514-001	MIC. TRANSF.		
T2	SCV0514-001	MIC. TRANSF.		

SECTION 6
PACKING



■ Initial setting of switches

SW NAME	SETTING
GAIN	•
MODE	CAM
W. BAL	AUTO 1
AUTO IRIS	NORMAL
BLACK	NORMAL
ZEBRA	ON
FILTER	3200K
DISP. MIX	OFF
MIC INPUT +48V	OFF
DNR	OFF
SHUTTER	OFF
FILE	OFF

Note: Accessories above are subject to change without notice.

SECTION 7
TECHNICAL INFORMATION

7.1 COMPARISON WITH PREVIOUS MODEL

BASIC SPECIFICATION		KY-27C	KY-D29
Pick-up Device		2/3 inch 3 IT CCD	2/3 inch 3 IT CCD
Picture Element		768H x 493V (NTSC)	768H x 493V (NTSC)
		754H x 581V (PAL)	754H x 581V (PAL)
Sensitivity		F9 at 2000 Lux	F11 at 2000 Lux
Optical Filter		3200K, 5600K, 5600K+1/16ND, Cross effect	3200K, 5600K, 5600K+1/16ND, Cross effect
Minimum Illumination		1.0 Lux with Lolux	0.35 Lux with Super Lolux
S/N		62dB Typical (NTSC)	65dB (DNR ON) (NTSC)
		60dB Typical (PAL)	63dB (DNR ON) (PAL)
Horizontal Resolution		800 TV	850 TV
Detail Enhancer		Horizontal : Dual	Horizontal : Dual
		Vertical : Dual	Vertical : Dual
Color Bars		SMPTE type (NTSC)	SMPTE type (NTSC)
		EBU FULL FIELD (PAL)	EBU FULL FIELD (PAL)
White Balance		Preset / AW1 / AW2 / FAW	Preset / AW1 / AW2 / FAW
Electric Shutter	(NTSC)	1/60, 1/100, 1/250, 1/500,1/1000, 1/2000	1/60, 1/100, 1/250, 1/500,1/1000, 1/2000
	(PAL)	1/50, 1/120, 1/250, 1/500,1/1000, 1/2000	1/50, 1/120, 1/250, 1/500,1/1000, 1/2000
Gain Boost		0, 6, 9, 12, 18dB, ALC	-3, 0, 6, 9, 12, 18dB, ALC

FUNCTION	KY-27C	KY-D29
Full Auto Shooting	Provided	Provided
Variable scan	60.5 - 1966.7Hz, 253 Step (NTSC)	60.5 - 1966.7Hz, 253 Step (NTSC)
	50.4 - 1953.1Hz, 305 Step (PAL)	50.4 - 1953.1Hz, 305 Step (PAL)
Lolux	Lolux : +33dB Gain	Lolux : +33dB Gain
		Super Lolux : 39dB Gain
High Resolution Mode	Not provided	Normal : 380 TV line
		V.Plus : 420 TV line
		V.Max : 450 TV line
ACCU Focus	Not provided	Built-in
Smooth Trans	Not provided	Built-in
Black Stretch	Not provided	Built-in
Black Compress	Not provided	Built-in
Auto Knee	Built-in	ON/OFF switchable
Digital Noise Reduction	Not provided	Built-in
Blemish Compensate	Not provided	Built-in
DTL H / V Balance	Not provided	Variable
DTL Frequency	Not provided	LOW, MID, HIGH, AUTO

Table 7-1-1 Comparison with Previous Model

7.2 DESCRIPTION OF NEW CIRCUITRY

7.2.1 Video process circuit

The video process circuit of this camera incorporates a digital process IC for digital processing of the main process circuitry including the detail (contour), gamma and knee circuits.
The IS circuit uses a sample & hold circuit which is an improved version of the previous CDS (Correlated Double Sampling) circuit, to optimize the clamping and sampling time constants. The gain amp circuit which has been accommodated in the preamplifier board is now located in the IS board to improve the S/N.

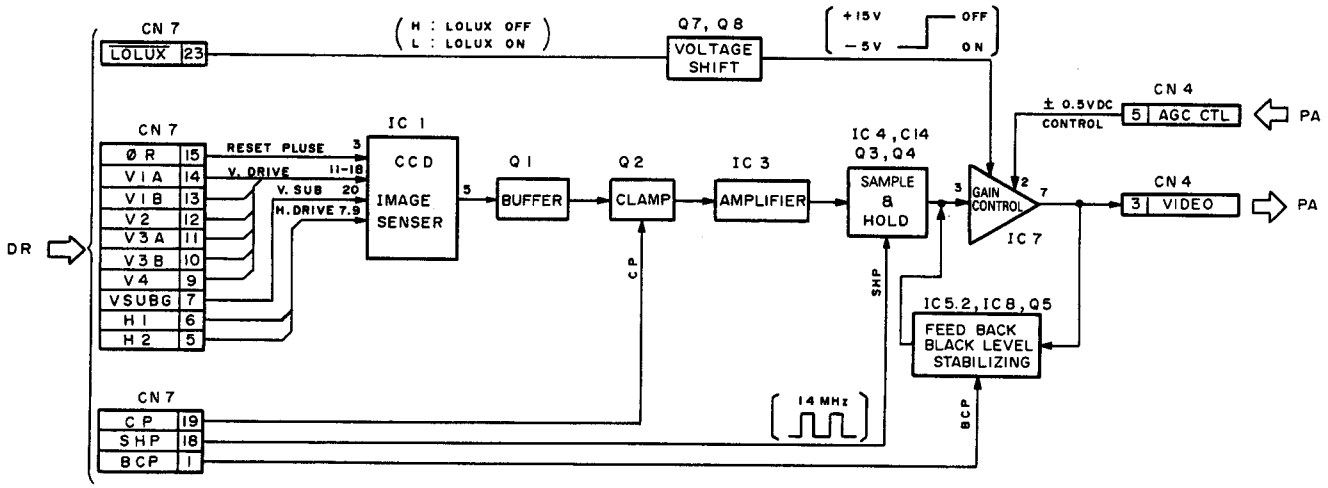


Fig. 7-2-1 IS Board Block Diagram

D/A converter (IC1) on the PA board outputs DC control signals to control the other circuits. The data input to the D/A converter is the serial commands from the CPU (IC1) on the CP board.
The gain control amp of the IS board inputs the dynamic shading, in-gain, white balance and gain (-3, 0, 6, 9, 12, 18 dB, AGC) control signals and varies the gain according to their signal levels.
The PA board has a two-element pre-knee circuit which improves the reproducibility of the highlight sections with the following operation;

(1) First, Q201 compresses the 600% signal into the 350% signal by setting the 250% section as the knee point, and;
(2) After additional amplification, Q202 compresses the 350% signal into the 200% signal by setting the 130% section as the knee point.

This two-point pre-knee circuit enables the compression of a 600% signal into a 200% signal.
The output from the pre-knee circuit is sent through the digital process IC in the DPR1 board in the next stage and through the auto-knee circuit in the DSP so that a video with a high dynamic range which does not lose gradation even in highlight sections can be obtained.

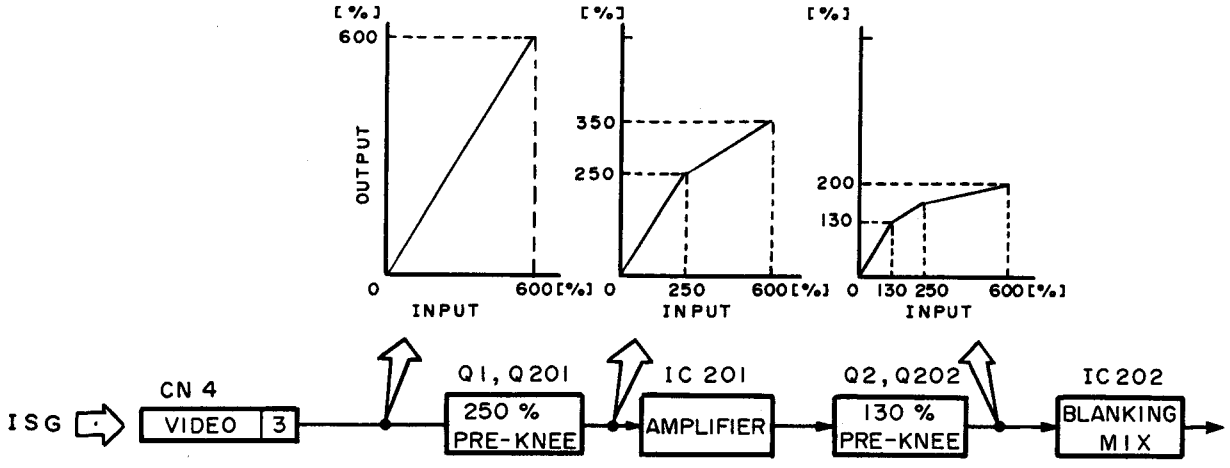


Fig. 7-2-2 Pre-Knee Circuit Block Diagram

The DPR1 board incorporates the digital process circuit which uses two DSPs. These DSPs internally process the following functions.

* Contour correction (Detail enhancer)
* Color matrix
* Gamma
* Auto-knee
* Black stretch/compress
* Y/R-Y/B-Y matrix

The DSPs feature original functions made possible by the digital processing and frame memory technologies, including;

* Digital noise reduction (DNR)
* Blemish compensation

The digitally processed signal is re-converted from D to A and output as the Y/R-Y/B-Y analog component signals at the SE board.

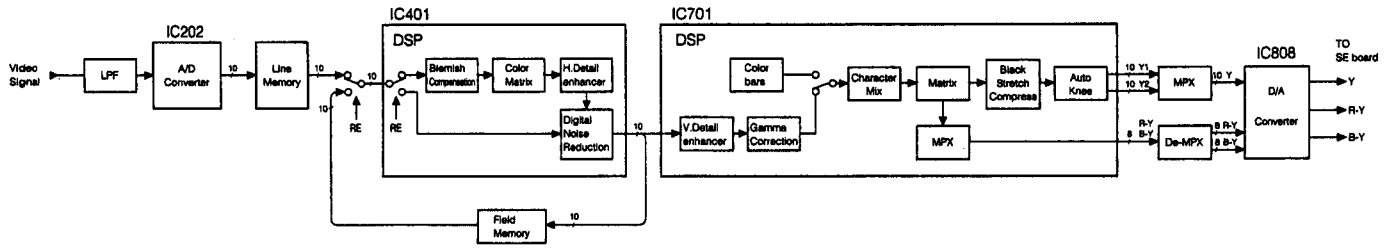


Fig. 7-2-3 Digital Process Circuit

7.3 CIRCUIT DESCRIPTION OF NEW FUNCTIONALITY

7.3.1 LoLux

• Function

The LoLux mode boosts the gain based on electrical gain boost and the simultaneous readout of 2 pixels from each CCD.

LoLux = Electrical gain (+27 dB) + Dual-pixel readout (+6 dB) = +33dB

• Circuit operation

The D/A converter (IC1) on the PA board varies the gain of the gain control IC on the IS board through the AGC CTL terminal and boosts it by +18 dB. In addition, the FET turns ON to reduce the amplifier's feedback resistance so that the gain is boosted further by +9 dB. So, total electrical gain boost is +27dB.

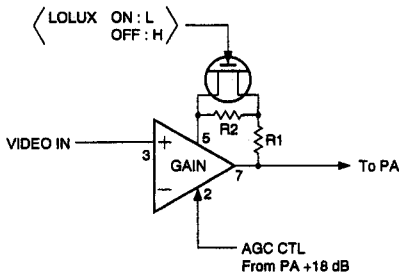


Fig. 7-3-1 LoLux-1

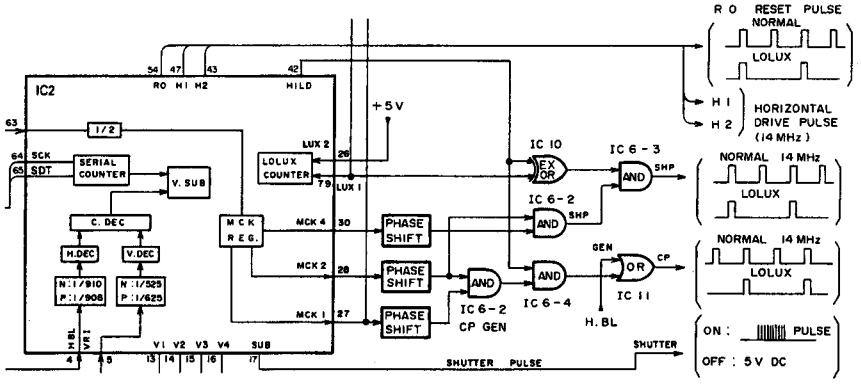


Fig. 7-3-2 LoLux-2

<Dual-pixel readout>

In the LoLux mode, the frequency of the reset pulse is halved so that the FDA amp in each CCD is reset once per 2 pixels (while it is usually reset once per pixel). As a result, the signals of the 2 pixels are added and the output level is doubled (+6 dB). As this makes it necessary that the sample & hold circuit also performs sampling of 2 pixels at a time, the CP and SHP should be divided similarly into 1/2.

NOTE

Since the adjacent pixels are added, the horizontal resolution is halved in the LoLux mode. Also note that the V.PLUS and V.MAX functions are not available in this mode.

7.3.2 Super LoLux

• Function

This mode provides an additional gain boost to the ordinary LoLux function by doubling the CCD exposure time (slow shuttering).

S.LoLux = LoLux (+33 dB) + Slow shutter (+6 dB) = 39 dB

• Circuit description

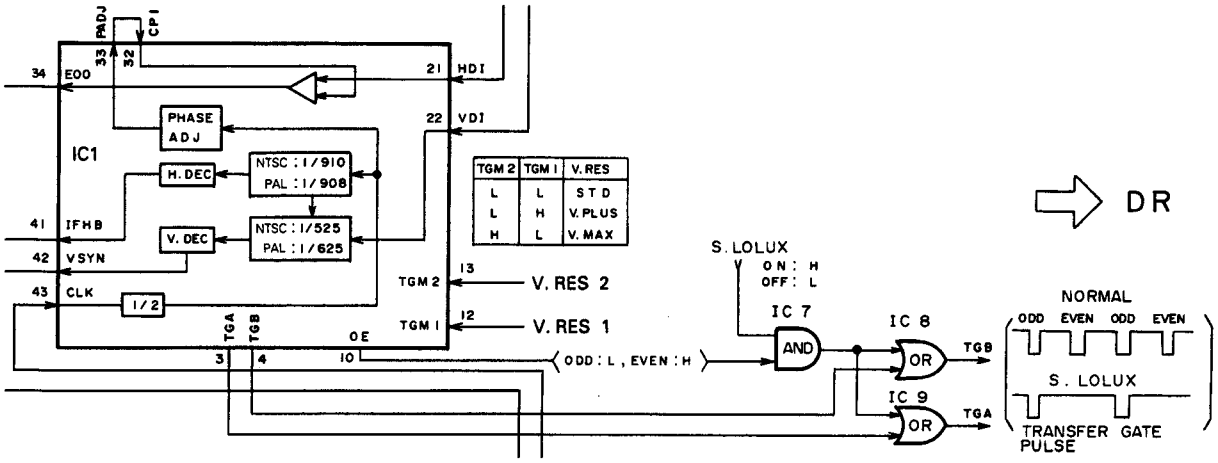


Fig. 7-3-3 Super LoLux-1

Pin 10 of IC1 on the TG board outputs the ODD/EVEN identification signal at every field. Pins 3 and 4 output the TG (Transfer Gate) pulse usually at every field, and this pulse opens the transfer gate so that the accumulated charged signal is moved to the vertical transfer CCD.

In the S. LoLux mode, the OR circuit IC8 & IC9 is engaged so that the TG pulse is output at every other field. This doubles the accumulation (exposure) time so the signal level is doubled from the normal level (+6 dB gain boost).

If the signal was output from the camera unchanged, a video with even fields would not be output. Therefore, as shown in Figure 7-3-4, the odd fields of the CCD output signal of each channel are stored in the field memory on the DPR1 board so that the signal of the stored odd fields is output in the periods of even fields.

NOTE

In addition to caution during the LoLux operation, also note that a residual image may be blurred with fast-moving images because the CCD exposure time is doubled (1/30s [NTSC], 1/25s [PAL]).

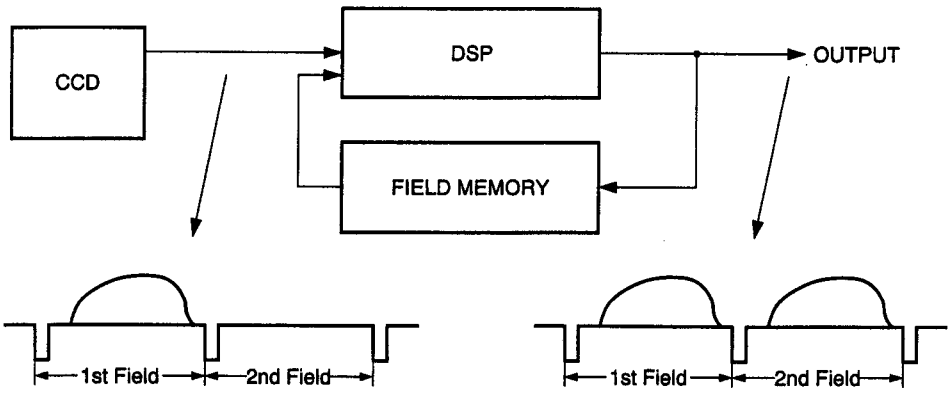


Fig. 7-3-4 Super LoLux-2

7.3.3 V.RES (Vertical Resolution)

• **Function**

The V.RES modes increase the vertical resolution by changing the vertical pixel readout method. The following 3 modes are available for selection:

1. STD (Standard) Vertical resolution 380 lines
2. V.PLUS Vertical resolution 420 lines
3. V.MAX Vertical resolution 450 lines

• **Vertical pixel configuration of the CCDs**

The CCDs used with this camera feature a vertical pixel count of 986 (NTSC), 1162 (PAL) pixels, which is twice that of ordinary CCDs. This high resolution is achieved by switching the readout modes.

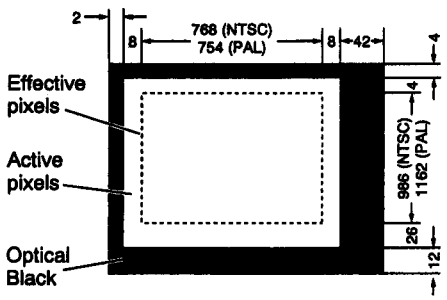


Fig. 7-3-5 CCD Pixel Configuration

• **Readout modes**

1. Normal mode (STD)

   The combination of 4 pixels which are vertically adjacent are changed between the odd and even fields as shown in Figure 7-3-6 and added before being output. The exposure time in this mode is 1/60 (NTSC), 1/50 (PAL) second.

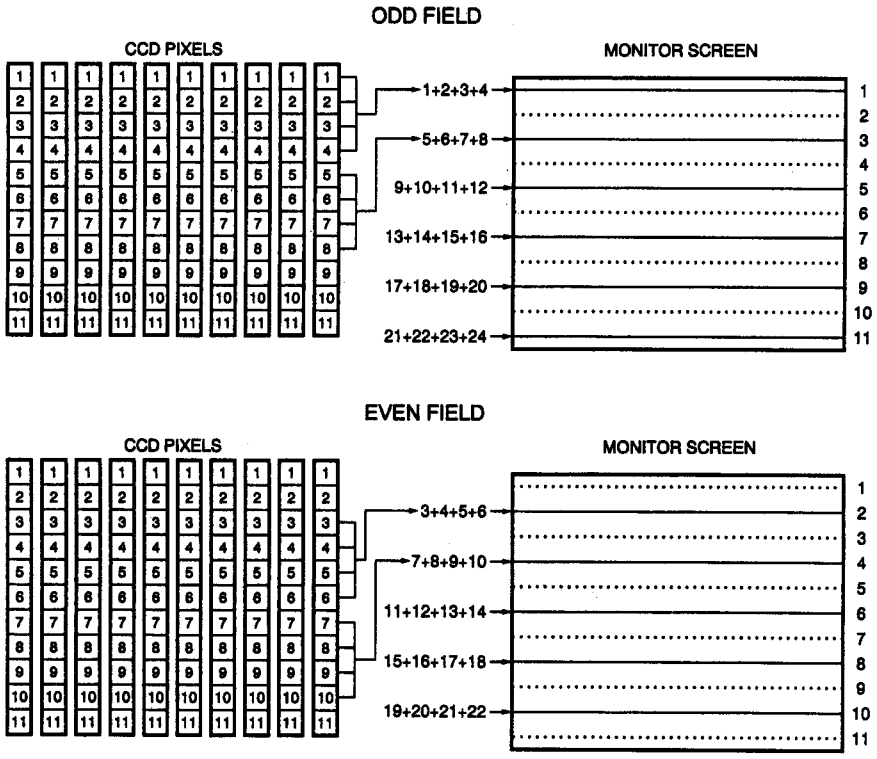


Fig. 7-3-6 Normal (STD) Mode

2. V.PLUS

The combination of 3 vertically adjacent pixels are changed between the odd and even fields as shown in Figure 7-3-6 and added before being output. The exposure time in this mode is 1/60 (NTSC), 1/50 (PAL) second for 2 of the 3 pixels and 1/30 (NTSC), 1/25 (PAL) second for the other pixel.

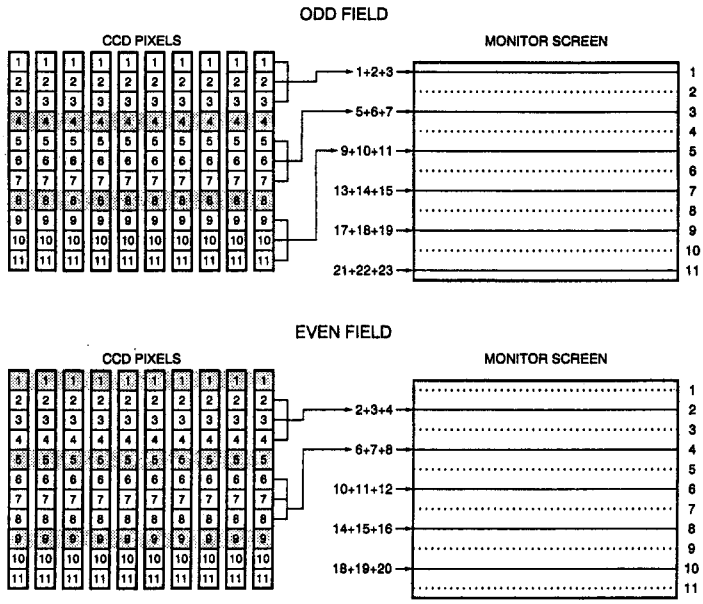


Fig. 7-3-7 V.PLUS Mode

3. V.MAX

The combination of 2 vertically adjacent pixels are changed between the odd and even fields as shown in Figure 7-3-8 and added before being output. Because the charged signal in passive field is thrown away, the sensitivity is decreased. The exposure time in this mode is 1/60 (NTSC), 1/50 (PAL) second.

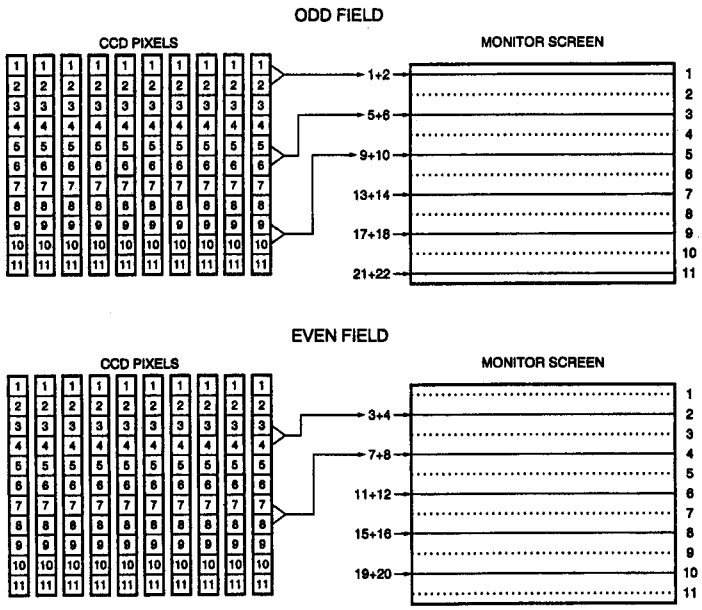


Fig. 7-3-8 V.MAX Mode

• Circuit description

When one of the V.RES modes is selected from the menu, the CPU outputs the serial data according to the mode as shown in Figure 7-3-9. This data is input to the D/A converter on the PA board and the two commands of V.RES1 and V.RES2 are output at JC0028 of IC1 on the TG board.

JC0028 is a timing pulse generator, which supplies the TG pulse according to the selected mode to the V. driver on the DR board to control the CCD readout mode.

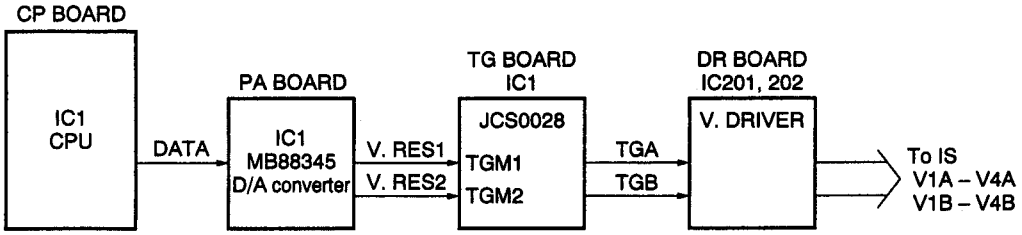


Fig. 7-3-9 V.RES Mode

As shown in Figure 7-3-10, photo-sensors are used in pairs and 2 pixel sets.

A and B are drived by vertical drive pulses (V1A - V4A, V1B - V4B) which generated by TGA and TGB. In the normal mode, the vertical shift register reads data of 2 pixels at a time and adds the data of 4 pixels when transferring data to the horizontal register. The relationship between the readout modes and pulses is as shown in Figure 7-3-11.

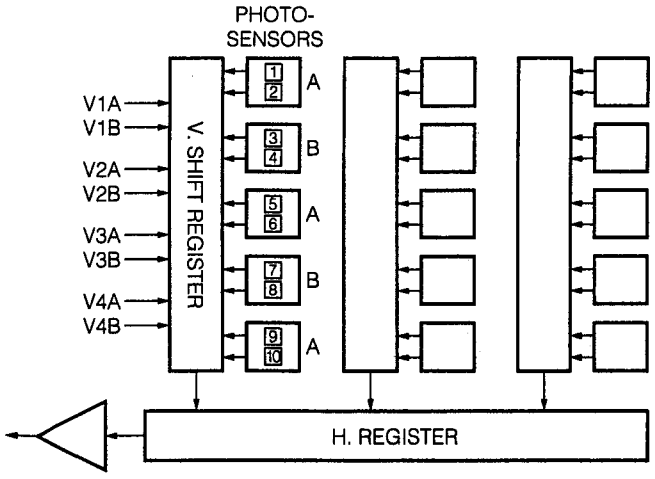


Fig. 7-3-10

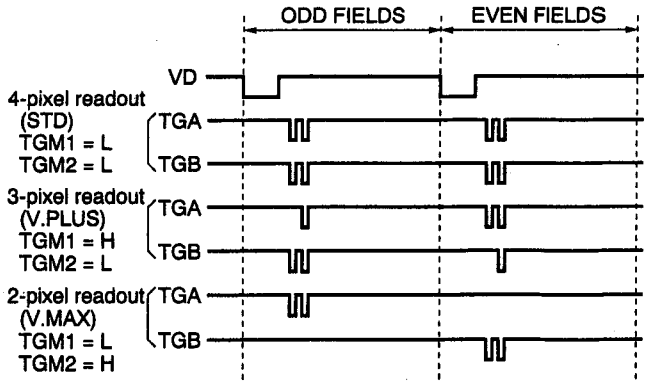


Fig. 7-3-11 Relationship Between Readout Modes and Pulses

CAUTION

The V.PLUS and V.MAX modes cannot be used when the LoLux or Super LoLux mode is selected. Also note that longer exposure time of V. PLUS mode results in noticeable residual images in moving pictures.

7.3.4 Accu-Focus

• Function

When this function is selected, it makes the depth of field shallow by automatically opening the iris for about 10 seconds to facilitate the focusing.

At the same time as above, the electronic shutter is activated automatically to correct the incident light amount which can be increased by opening the lens iris so that the 100% signal output level can always be obtained. The shutter speed can be varied up to 1/2000 second.

• Circuit description

The entire control is processed by software; as shown in Figure 7-3-12, after forcing the lens to the auto iris mode, the iris is opened by supplying DC voltage from the iris control terminal. The CPU sends the shutter data according to the level of the signal input from the NAM mix circuitry to the clock signal generator on the TG board, so that the shutter speed varies and causes the camera to output a 100% video signal.

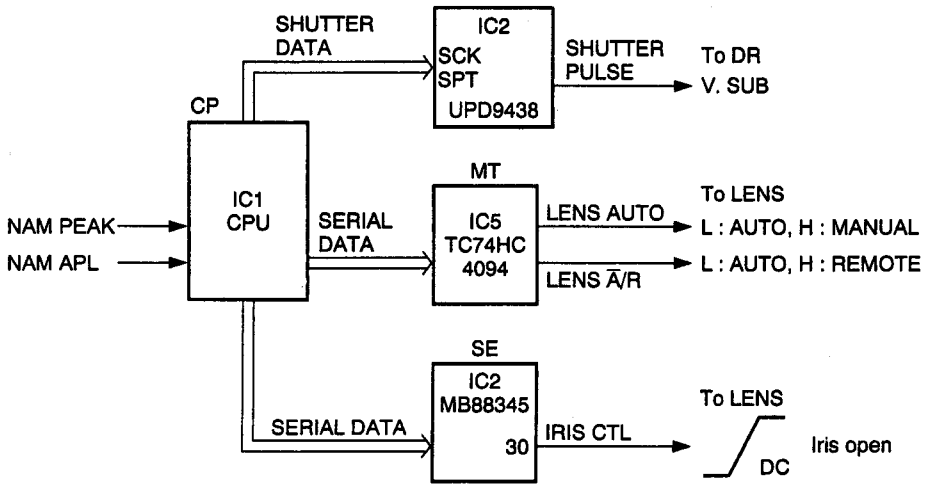


Fig. 7-3-12 Accu-Focus

7.3.5 SMOOTH TRANS (Smooth Transition)

• Function

This function allows variation in the gain and white balance values gradually in order to avoid sudden picture changes when the gain or white balance setting is switched.

• Circuit description

The AGC control voltage input to the gain control IC on the IS board is varied gradually and smoothly by the software.

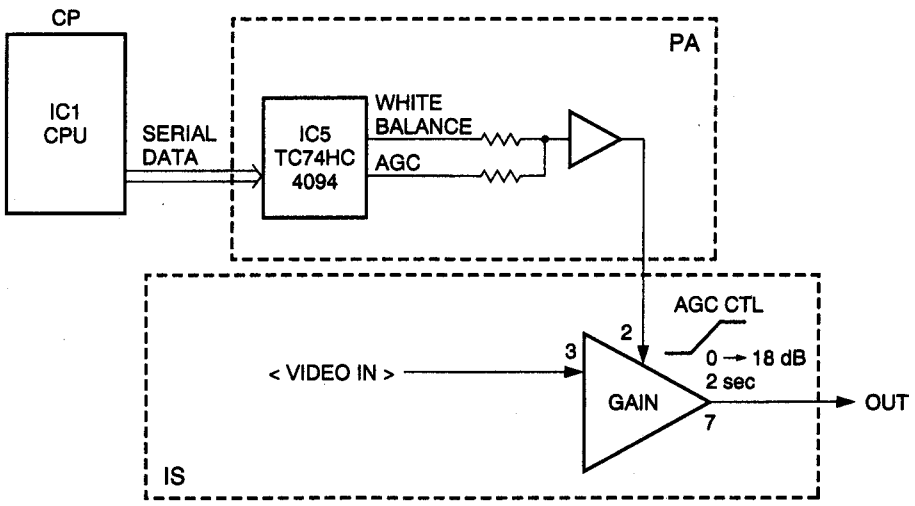


Fig. 7-3-13 SMOOTH TRANS

7.4 DIGITAL PROCESSING FUNCTIONS

7.4.1 SVP (Scan-line Video Processor)

• SVP

The SVP is a video processing DSP (Digital Signal Processor) capable of high-speed image processing operations of a large number of pixels. The signal processing algorithms and operation accuracy are varied freely by the software.

• Construction of SVP

The SVP consists of the SVP core and the IG (Instruction Generator). The SVP core is composed of a 3-layer construction (data input registers - DIRs, processing elements - PEs, data output registers - DORs).

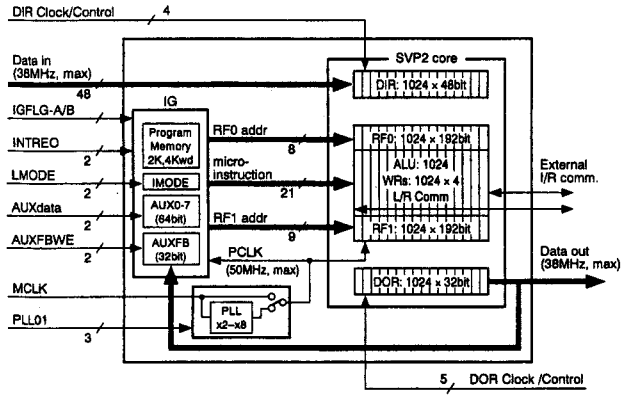


Fig. 7-4-1 Construction of SVP

To process video signals in real time, the series of operations from the data input through DIRs to the processing using PEs and the data output through DORs are performed in a pipeline method using independent clock signals.

A large number of PEs are arranged in parallel so that their parallel operation increases the signal processing speed. The PEs are arranged in parallel according to the SIMD (Single Instruction stream - Multiple Data stream) configuration and 1024 PEs (ROM version : 864PEs) are used to process the image data of a single scanning line simultaneously.

The SIMD configuration has the program determining the operations of the PEs (IG) on only one chip and all PEs perform the same operations according to this program. The presence of a single IG makes it possible to integrate many PEs with relatively simple structures and assign a PE to every pixel.

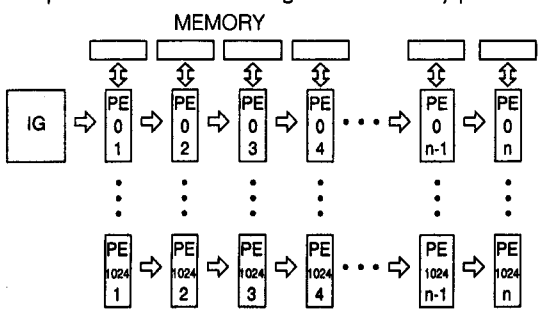


Fig. 7-4-2 SIMD Type Parallel Processing

Each PE is composed of a 1-bit ALU, four working registers (WRM, WRA, WRB, WRC) and two 192-bit register files (RF0, RF1). Each PE is connected to a 48-bit DIR and 32-bit DOR.

• Operation of SVR

- Pipeline operation of each line using DIRs, PEs and DORs

1. The video signal is input into the DIRs at the positive-going edge of each SWCK (DIR clock). After the scanning line data of a line has been accumulated in the DIRs, the DIR data is transmitted to RF1 in the PEs in the next horizontal blanking period.
2. The image processing operations are performed by the PEs in a single horizontal scanning period.
3. In the next horizontal blanking period, the results of PE operations by RF0 are transmitted to the DORs, and the DOR data is output at the positive-going edge of the SRCKs (DOR clock signals).

- The output data is delayed by at least 2 lines and additional line delay also occurs during the vertical signal processing.

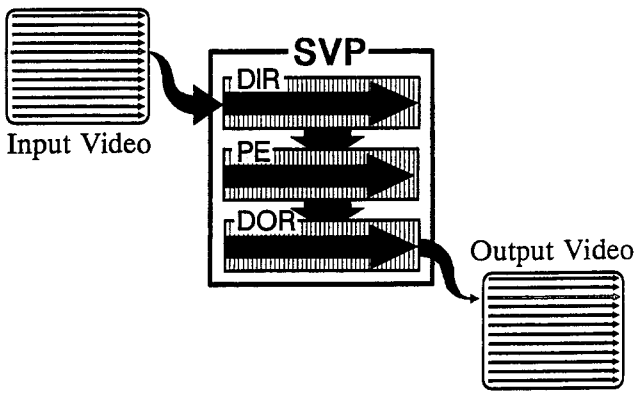


Fig. 7-4-3 SVP Operation

7.4.2 DNR (Digital Noise Reduction)

• Function

This function reduces noise produced during shooting of the video signal.

It can be activated at any gain from 0 dB to +18 dB as well as in the LoLux and Super LoLux modes.

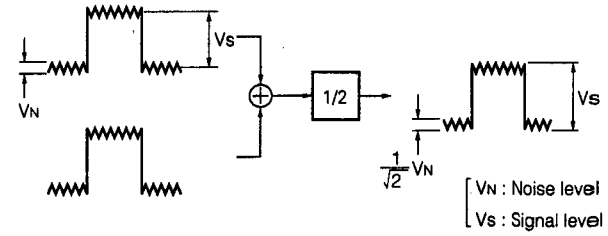


Fig. 7-4-4 Principle of DNR

Video signal generally has strong correlation between two pixels neigboring each other in the vertical, horizontal or field direction but has not correlation among random noises.

If two signals having strong correlation with each other are summed up, the total signal level becomes double but noise level is not double but $\sqrt{2}$ since noise is generated at random. Therefore, if the summed up signal is halved to return to the original level, noise level decreases to $1/\sqrt{2}$. In general, signals having strong correlation are added N times, there is no change in the mean level but noise level is reduced to $1/\sqrt{N}$. This principle applies to the noise reducer.

Principle of DNR

• Operation description

With this model, noise reduction is performed during operation by using the above principle.

(1) The DSP output signals Ⓐ are stored in the field memory.
(2) By subtracting the stored signal of the previous field Ⓐ from the video signal of a field Ⓑ, the noise component Ⓒ can be obtained because it is random and not compensated for by the subtraction.
(3) Then, by subtracting the noise component Ⓒ from the current field signal Ⓑ, the DNR can output a video signal with less noise Ⓓ.

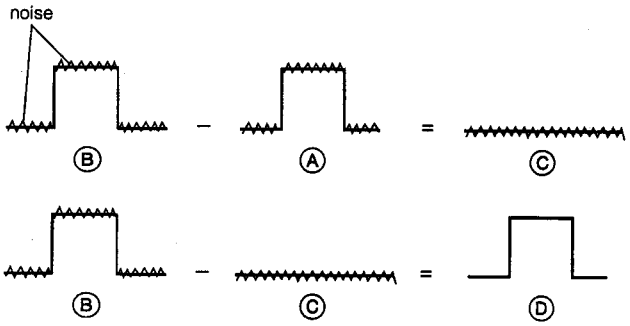


Fig. 7-4-5 Noise Reduction Method

The following operation is carried out in the circuit.

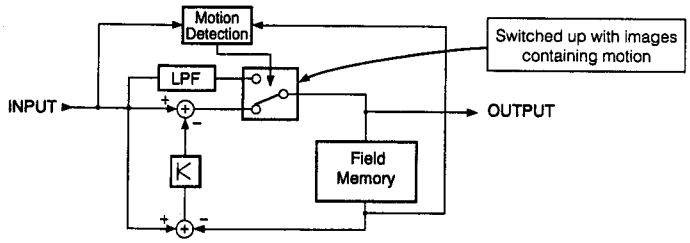


Fig. 7-4-6 DNR Block Diagram

Fig. 7-4-6 shows a block diagram of DNR. The improving rate of this circuit in the S/N ratio is given by the following equation.

$$\text{S/N ratio improvement} = 10 \log \frac{1+K}{1-K} \quad \left(\begin{array}{l}K : \text{Recursive} \\ \text{coefficient}\end{array}\right)$$

In other words, the larger the recursive coefficient is (as nearly as 1), the more the S/N ratio is improved, however, increase in the S/N ratio improvement yields much more residual images. For, differential component (field differential component) between the current field and the previous field contains not only noise but also motion signal component, and subtraction of a field differential signal from the original signal results in removal of motion signal component.
Therefore, the DSP performs motion detection so that images containing much motion are not subjected to the DNR processing but that their noise is reduced by filtering using the LPF.

< DNR control >

When the [DNR] switch on the camera is switched, the levels of the 2 control signals input to pins 16 and 18 of IC9 on the CP board are switched between H and L as shown in Table 7-4-1. Based on the combination of the 2 control signals, IC9 sets the DNR ON/AUTO/OFF and transmits this data to the CPU (IC1) in the form of 8-bit parallel data.
The CPU transfers the data to the PTC (IC603) on the DPR1 board. The PTC is used to control the DNR function in DSP (IC401).

DNR	IC9	
	Pin 18	Pin16
ON	H	L
AUTO	L	H
OFF	H	H

Table 7-4-1 Relationship Between DNR Switch Settings and IC9 Input Levels

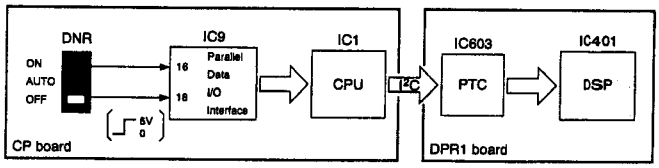


Fig. 7-4-7 DNR Operation

■ Operation when the [DNR] switch is set to "ON"

While the [DNR] switch is set to "ON", the effective level of the DNR can be set to LOW, MIDDLE or HIGH at the "DNR LEVEL" of the [ADVANCED MENU]. By changing this switch, the recursive coefficient K is altered in the DNR circuit. For example, when "HIGH" is set, the value of K becomes larger and the more the S/N ratio is improved, however, increase in the S/N ratio improvement yields more residual images.

■ Operation when the [DNR] switch is set to "AUTO"

When the [DNR] switch is set to "AUTO", the DNR levels are automatically switched according to the GAIN setting as shown in the table 7-4-2.

GAIN	DNR LEVEL
-3dB , 0dB	OFF
6dB , 9dB	LOW
12dB , 18dB	MIDDLE
LOLUX , S.LOLUX	HIGH

Table 7-4-2 DNR Levels According to the GAIN Setting (in AUTO mode)

7.4.3 Blemish Compensation

• Function

This function compensates for the blemishes (flaws with high signal levels) produced by CCDs by a digital technique using memory. As this function is required only after replacing the optical block assembly or when a new blemish is produced, and not necessary in normal use. The detection of the blemishes to be compensated for can be performed with a service menu (see section 2.9).

• Detection

Blemishes are detected by DSP (IC401) on the DPR1 board. the DNR (see previous section) is applied to reduce the video signal noise and allow accurate detection.

The output signal from a point where a blemish occurs is characterized by a partial increase in the level. The DSP sets a certain detection level and compensates for the blemishes which exceed this level.

The number of blemishes which can be compensated for is up to 13 as total of three channels. When more than 14 blemish points are detected, the detection level is increased so that only the 13 blemishes with the higher levels can be compensated for.

The compensation points are set every time the detection (ERROR DETECT START) is activated.

The detected position data is stored in the EEPROM (IC7) on the CP board.

When power is turned ON, the CPU sends the detection position address data to DSP (IC401).

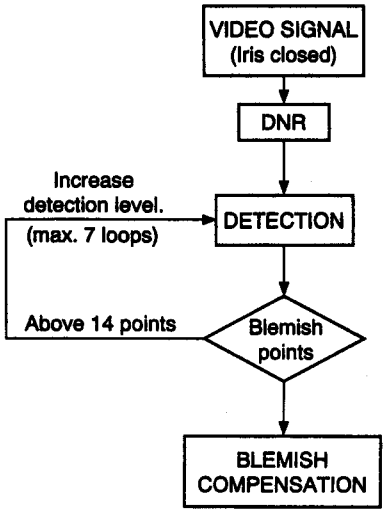


Fig. 7-4-8 Blemish Detection Flow Chart

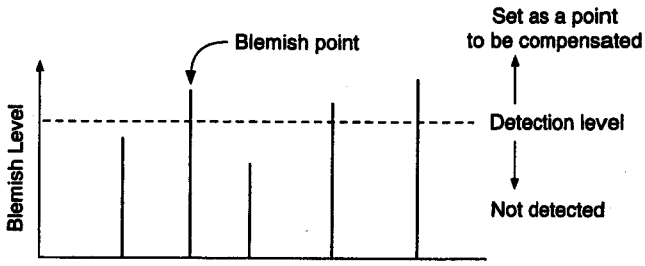


Fig. 7-4-9 Blemish Detection

NOTE

The iris is forced to close during the detection. If the iris is not closed for somereason, "IRIS NOT CLOSED?" is displayed on the viewfinder and monitor screen and a detection error occurs.
The detection is possible by capping the lens mount.

• Compensation

At the moment the power is turned ON, the blemish position address data stored in the EEPROM (IC7 on the CP board) is transmitted in serial communication to the DPR1 board and stored in the field memory (IC402 - IC405).

The DSP compensates for blemish by using the blemish position data stored in the field memory as it occurs in real time.

As shown in Figure 7-4-10, compensation is performed by assigning the average level of the signals on both sides of the blemish point as compensation signals.

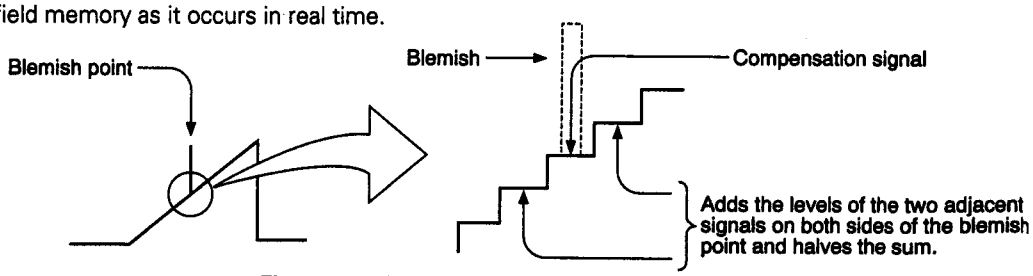


Fig. 7-4-10 Blemish Compensation

7.4.4 Black stretch

• Function

This function stretches the signals of low-illuminance level sections so that the contrast of the dark sections can be seen.

• Operation

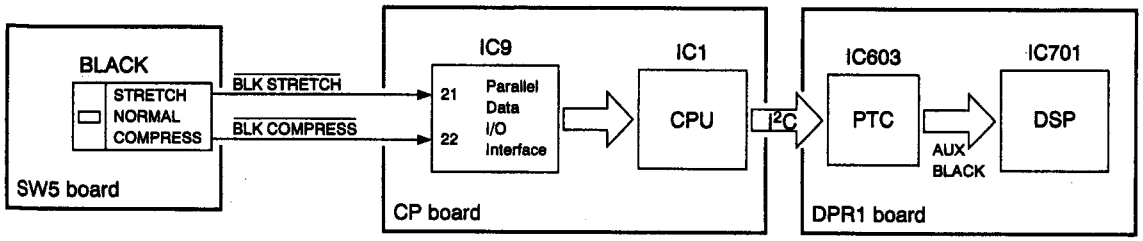


Fig. 7-4-11 Black Stretch/Compression

Description IC9 (Parallel Data I/O Interface) on the CP board inputs the control signals from the external switches and transmits the switch setup to the IC1 (CPU) in the form of 8-bit parallel data to control the operation of the camera.
When the [BLACK] switch of the camera is set to STRETCH, pin 21 of IC9 on the CP board goes L level. The 8-bit parallel data output from IC9 is used to transmit the black stretch ON data to IC1.
The CPU transfers the data to the PTC (IC603) on the DPR1 board, and the PTC switches the camera for the black stretch control by means of the BLACK STRETCH / COMPRESS control signal.
The DSP (IC701) controls how the gamma correction is applied, by increasing the gamma correction level of low-illuminance sections to a higher level than usual.

7.4.5 Black compression

• Function

This function provides the picked-up image with additional contrast in case the image is generally bright and contains little contrast.

• Operation description

When the [BLACK] switch is set to COMPRESS, pin 22 of IC9 on the CP board goes L level and the DSP switches the camera for the black compression control (see Figure 7-4-10).
The DSP corrects gamma of the low-illumimance sections by decreasing their level on the contrary to the black stretch operation.

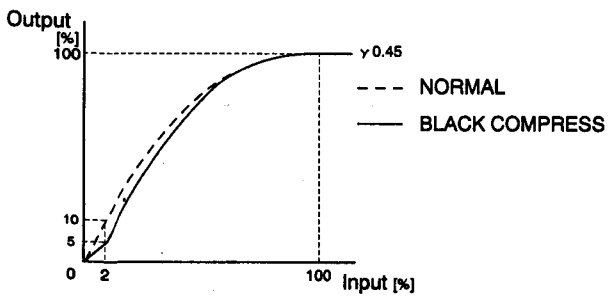


Fig. 7-4-13 Black Compression

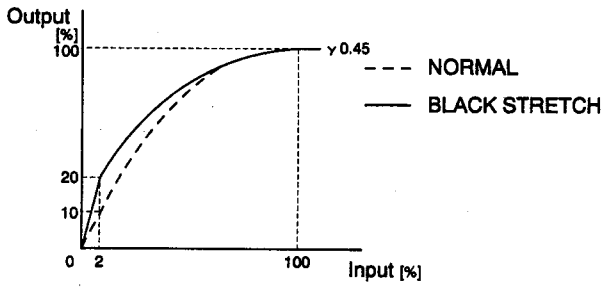


Fig. 7-4-12 Black Stretch

7.4.6 Knee (Auto-knee) circuit

• Function

This camera achieves a dynamic range of 600% by first applying the pre-knee processing using the 250% and 130% sections as the knee points in the analog circuitry (see section 7.2.1) then applying the knee processing using the 100% (80 to 100% in auto-knee operation) section as the knee point in the digital circuitry.

• Operation description

After being compressed to 200% by the pre-knee circuit described above, the signal is subjected to the knee processing using the 100% section as the knee point by the DSP on the DPR1 board. As a result, the signals of 100% to 200% sections are compressed to 10% and the maximum output level of the DSP becomes 110% as show in Fig.7-4-14.
In the 600% input signals, the sections from 100% to 600% are compressed to 10% with the above process.

• Auto-knee

This is a function which reproduces the level of the high-illuminance section above 100%. [MENU] item "AUTOKNEE" is provided to allow varying the knee point set in the DSP between 70% and 100% automatically according to the video level. This function is the auto-knee function.

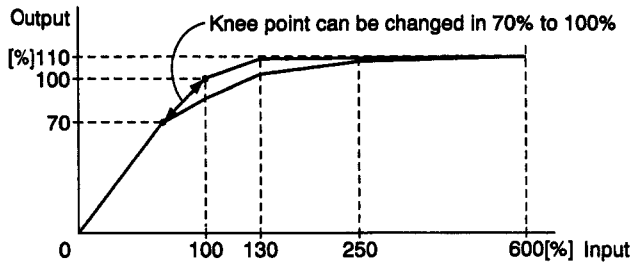


Fig. 7-4-14 Knee (Auto-Knee) Circuit

7.4.7 Detail enhancer

•Function

The detail enhancer is a function similar to the conventional contour compensation which enhances the contour of objects. This function is carried out digitally in the DSP.

This camera applies a two-way correction to both the horizontal and the vertical signals. The detail signals (contour enhancing signals) are generated by obtaining edge components after calculating video signals in the DSP.

The noise slicing of the detail signals is also performed in the DSP. The slice level corresponds to the GAIN, so the higher the GAIN becomes, the higher the threshold level of the slice becomes.

The channels to be mixed with horizontal and vertical detail signals are shown in the Table 7-4-3.

Detail signals	Source signals	Mix channels
H detail signals	G CH signal	G CH
	R CH signal	B & R CHs
V detail signal	R + G CHs signal	B & G & R Chs

Table 7-4-3 Channels to be mixed with source signals

•Operation description

The detail signals are calculated by the coefficients of the signal levels at 3 points including those before and after the sampling point of the image signal.

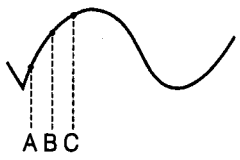


Fig. 7-4-15

When it is assumed that three sampling points, A, B and C exist, the detail signal of point B is calculated from the signals of point A and C which are located before and after the point B.

Detail signal of point B = -0.25A + 0.5B - 0.25C

For example, calculation of the image signal shown in the Figure 7-4-17

(1) B: the point where there is no change in the video signal level (A=B=C)

-0.25A + 0.5B - 0.25C = 0

(2) C: the contour section of the image (B=C=0, D=1)

-0.25B + 0.5C - 0.25D = -0.25

Then, the detail signals towards the negative direction are generated.

(3) D: the contour section of the image (C=0, D=E=1)

-0.25B + 0.5C - 0.25D = +0.25

Then, the detail signals towards the positive direction are generated.

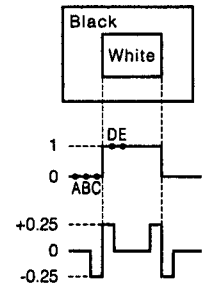


Fig. 7-4-16 Detail Enhancer

The generation of the detail signals is the same for both the horizontal and the vertical.

With the horizontal detail signal, the frequency of the contour enhancement can be set with the setting of the "DTL. FREQUENCY" of the [ADVANCED MENU].

When Auto mode, the detail frequency can be changed automatically either Low, Middle, High or Super High (7 MHz), depend on the position of zoom.

When the zoom position is tele side, the frequency set to low, when it is wide, the frequency become high.

DTL. FREQUENCY	Contour enhancement Frequency
HIGH	Approx. 5 [MHz]
MIDDLE	Approx. 4 [MHz]
LOW	Approx. 2.5 [MHz]

Table 7-4-4 Horizontal Detail Signal Frequency

By changing the setting of the "DTL. H/V BAL", whether or not the enhancement for the horizontal or vertical direction should be stronger, can be set.

The levels of the horizontal and of the vertical detail signals can be varied by changing the value of "DETAIL" on the [MENU].

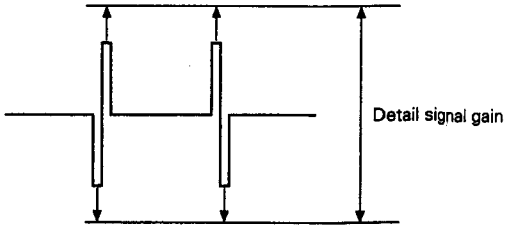
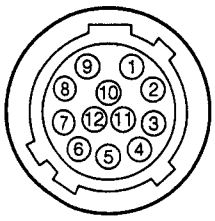


Fig. 7-4-17 GAIN Variation of Detail Signals

7.5 SPECIFICATION OF INTERFACE

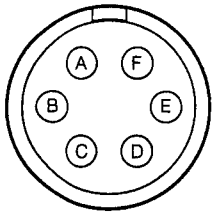
7.5.1 Lens connector



(EXT VIEW)

Pin No.	Signal	Specification	FROM	TO
1	LENS RET	Hi-Z or LOW (GND)	LENS	CAMERA
2	LENT VTR TRIGGER	Hi-Z or LOW (GND)	LENS	CAMERA
3	GND	GND		
4	LENS AUTO/MANUAL	MANUAL : 0V, AUTO : 5V	CAMERA	LENS
5	IRIS CTL	OPEN 7.3V, CLOSE : 2.5V	CAMERA	LENS
6	UNSWITCHED 12V	12V DC	CAMERA	LENS
7	IRIS POSITION	OPEN : 7.3V, CLOSE : 2.5V	LENS	CAMERA
8	IRIS AUTO/REMOTE	REMOTE : 0V, AUTO : 5V	CAMERA	LENS
9	EXTENSION ON/OFF	LENS EXTENSION ON : Hi-Z, OFF : 0V	LENS	CAMERA
10	ZOOM POSITION	WIDE : 2V, TELE : 7V	LENS	CAMERA
11	NOT USED			
12	NOT USED			

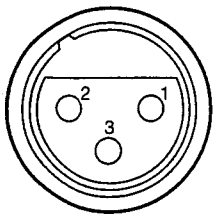
7.5.2 View finder connector



(EXT VIEW)

Pin No.	Signal	Specification	FROM	TO
A	TALLY ON/OFF	ON : 5V, OFF : 0V	CAMERA	VF
B	SWITCHED 12V	DC 10.5V – 17V	CAMERA	VF
C	GND		CAMERA	VF
D	GND		CAMERA	VF
E	VIDEO IN	1Vp-p, 1K≦Zi≦10K OHM	CAMERA	VF
F	BATTERY ALARM	TTL	CAMERA	VF

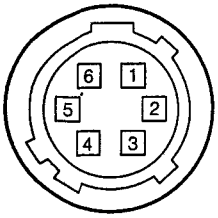
7.5.3 Mic connector



(EXT VIEW)

Pin No.	Signal	Specification	FROM	TO
1	MIC IN GND		MIC	CAMERA
2	MIC IN HOT	–60dBm Balanced (+48V PHANTOM)	MIC	CAMERA
3	MIC IN COLD	(+48V PHANTOM)	MIC	CAMERA

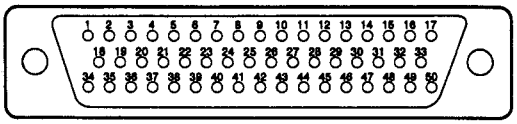
7.5.4 RM connector



(EXT VIEW)

Pin No.	Signal	Specification	FROM	TO
1	GND		CAMERA	RM
2	OPERATE (Remote/Local)	REMOTE : 5V, LOCAL : 0V	RM	CAMERA
3	GND		CAMERA	RM
4	SID4	SERIAL DATA (TXD)	CAMERA	RM
5	SID3	SERIAL DATA (RXD)	RM	CAMERA
6	9V	DC INPUT	CAMERA	RM

7.5.5 50 Pin connector



(EXT VIEW)

Pin No.	Signal	Specification	FROM	TO
1	5V OUT	5V DC OUT	CAMERA	KA-27
2	GND	GND		
3	9V	9V DC OUT	CAMERA	ADAPTERS
4	–5V	–5V DC OUT	CAMERA	ADAPTERS
5	GND			
6	GND			
7	ANTON BAUER	0V TO 5V DC INPUT	BATTERY	CAMERA
8	V.SYNC OUT	5Vp-p (downward)	CAMERA	ADAPTERS
9	REAR TALLY	ON : 0V, OFF : 5V	CAMERA	RM-P270
10	GENLOCK IN	VBS OR BLACK BURST, Zi=75 OHM	KA-27	CAMERA
11	NOT USED			
12	Y2 OUT	1Vp-p[SYNC : 0.286(N)/0.3(P) Vp-p], Zo=75 OHM		
13	DIGITAL S VTR DETECT	DIGITAL-S VTR L LOW, other : Hi-Z	VTR	CAMERA
14	COLOR FRAME PULSE			
15	MIC GND	AUDIO L CH GND	CAMERA	VTR/ADAPTERS
16	MIC COLD	AUDIO L CH COLD	CAMERA	VTR/ADAPTERS
17	MIC HOT	AUDIO L CH HOT –20dBm BALANCED	CAMERA	VTR/ADAPTERS
18	RETURN VIDEO IN	1Vp-p, Zi=2.2K OHM	VTR/ADAPTERS	CAMERA
19	SYNC OUT	5Vp-p, CMOS OUTPUT	CAMERA	ADAPTERS
20	C (CHROMA) OUT	0.286(N)/0.3(P)Vp-p, Zi=1K OHM	CAMERA	S-VHS VTR
21	GND			
22	GND			
23	GND			
24	GND			
25	SAVE CONTROL	ST-BY : 5V, SAVE : 0V	CAMERA	VTR
26	LENS RETURN SWITCH	RETURN : LOW, NORMAL : Hi-Z	CAMERA	VTR/ADAPTERS
27	VTR START/STOP	START : 5V, STOP : 0V DC	CAMERA	VTR/ADAPTERS
28	RM CONTROL IN	RM : LOW, NORMAL : Hi-Z	ADAPTERS	CAMERA
29	R-Y OUT	0.7V(N)/0.525V(P), Zo=1K OHM	CAMERA	VTR/ADAPTERS
30	R OUT	1.4Vp-p, Zo=2K OHM	CAMERA	ADAPTERS
31	ST-BY/SAVE OUT	ST-BY : 9V, SAVE : 5V DC	CAMERA	VTR/ADAPTERS
32	RETURN AUDIO IN	–6dBs, Zi=20K OHM UNBALANCED	VTR/ADAPTERS	CAMERA
33	GND			
34	G OUT	1.4Vp-p, Zo=2K OHM	CAMERA	ADAPTERS
35	GND			
36	B-Y OUT	0.7V(N)/0.525V(P), Zo=1K OHM	CAMERA	VTR/ADAPTERS
37	B OUT	1.4Vp-p, Zo=2K OHM	CAMERA	ADAPTERS
38	PLAYBACK CONTROL	EE : 5V or Hi-Z, PB : LOW	VTR	CAMERA
39	12V DC IN	10.5V TO 17V DC INPUT	VTR/ADAPTERS	CAMERA
40	12V DC IN	10.5V TO 17V DC INPUT	VTR/ADAPTERS	CAMERA
41	Y1/Y2 OUT	1Vp-p[SYNC : 0.286(N)/0.3(P) Vp-p], Zo=1K OHM	CAMERA	VTR/ADAPTERS
42	GND			
43	COMPOSITE VIDEO OUT	1Vp-p, Zo=75 OHM	CAMERA	VTR/ADAPTERS
44	GND			
45	DIGITAL CAMERA DETECT	DIGITAL CAMERA : LOW, OTHERS : Hi-Z	CAMERA	VTR
46	S-VHS CONTROL IN	Y/C OUT : LOW, COMPONENT OUT : HIGH	VTR	CAMERA
47	SID TXD	SERIAL COMMAND, TTL	CAMERA	VTR
48	SID RXD	SERIAL COMMAND, TTL	CAMERA	VTR
49	NOT USED			
50	CALL	CALL IN : LOW		